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Who Shall Retail Electric Sewing Machines?

Electrical Dealers Should Be Granted Rightful Recognition as the Legitimate Retailers of Motor-Equipped Machines

By WILLIAM B. EASTWOOD

Opportunity! Another name today is "Electric Sewing Machine," and electrical dealers all over the United States have their ears cocked and their eyes peeled for a solution of the retailing problem that will permit them to sell electric sewing machines on the same basis as that of other appliances.

At the present time the merchandising of sewing machines appears to be "up in the air" for lack of a uniform and adequate system that will give to the electrical dealer the opportunity to handle electric sewing machines without the severe competition of district agencies that are under the immediate direction of the manufacturers and who employ thorough house-to-house solicitation.

Demonstration Aids Retailing of Electric Sewing Machines.

Housewives in sufficient numbers throughout the country have given the motor-equipped sewing machine a thorough and satisfying trial, with the result that the electrification of the sewing machine is an established fact and the demand for electrically equipped machines has, within the past year, become as great if not greater than the demand for standard household appliances.

Sewing-Machine Manufacturers Enter the Electrical Field.

As the result of the demand for the electrically equipped sewing machine practically every manufacturer of the well-known makes of sewing machines has arranged or is arranging to market his machine with an electric motor attachment. Some are manufacturing portable machines for the home and many of them are now casting their machine-heads with plates, brackets or lugs for the attachment of the "sew-motor."

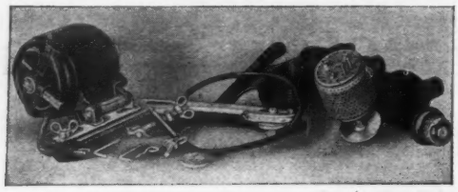
With the electrification of the sewing machine has also come an attempt at a readjustment of merchandising policy on the part of some of the manufacturers. Thus it is that at the present time there is a chaotic condition in the selling field, indicative of lack of co-operation and co-ordination of sales policies. Out of this condition must be evolved a substantial and adequate system, different from any in the past, that will be fair alike to the manufacturers, jobbers, dealers, and particularly to the consumers with whom the dealers are in intimate contact. That period of general readjustment is at hand and it behooves the electrical dealers, working through their organizations and with the support of affiliated associations, to aggressively seek such arrangements as will protect them in the merchandising of electric sewing machines.

New Conditions Involve New Methods of Retailing.

The handling of the sewing machine involves something more than the installation in the home of a motor-equipped machine ready to run with the turn of a switch and the pressing of the rheostat control. The dealer must learn to sew in order to teach the customer the operation of the machine. But that is not difficult for an electrical dealer or salesman who has had to learn

the best ways to operate the electric washer and wringer, the vacuum cleaner and other domestic appliances.

That the electrical dealer may be reminded of some of the elements and traditions to be overcome by the reconstruction of sewing-machine merchandising methods, it is well to revert to history. Sewing machines, as a general rule,



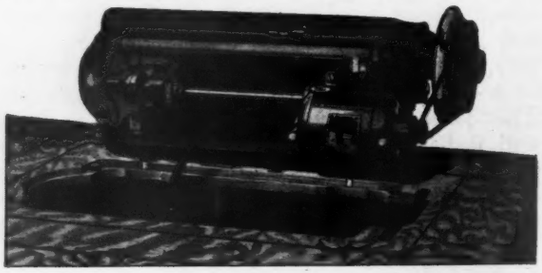
Complete Sew-Motor with Accessories.

have been sold on the plan of house-to-house canvass. Only in a few instances, such as the large hardware jobbers, have they been distributed through the jobbing channels and through dealers who sold by mail or by demonstration methods on his floor.

Rather early in the history of the sewing machine—known to old salesmen in the business as the one-machine era—it appears that an agreement existed that gave exclusive territory to a manufacturer who, through traveling and supervising agents, established and maintained agencies. Salesmen working out of these agencies usually loaded one or more machines into a light, horse-drawn rig and drove about the city and through the more thickly settled suburbs. They would unload a machine at the home of a prospect, demonstrate it and leave it on trial.

Seldom was such a sale lost. There was no competition to fear, even from the mail-order houses, because the mail-order house of today was only in its "shoestring" stage. If the customer possessed an old machine it was traded in on the new one, and a very nominal sum was allowed against the purchase price. These agents possessed skill in operating the sewing machine and a practical knowledge of garment-making.

With the advent of the department store the sewing machine was given a place, and efficient



Method of Attaching Motor Beneath Machine Head.

floor and window demonstrations in charge of skilled men and women proved profitable. By this time, also, the mail-order houses had developed and many sewing machines were distributed through that source, thus cutting into the hitherto exclusive territories of the agencies and causing the house-to-house canvassers to assume more aggressive sales policies and suffer a narrowing of the margin of profits.

When the electric portable sewing machine came into the market less than five years ago, following the development of other electrical household appliances, it found a ready welcome by the electrical trade. Jobbers handling this type of machine, with the motor application attached by means of screws, brackets, strap connections, etc., found no difficulty in making fast sales, as the electrical dealers knew practically nothing about the sewing-machine business and bought quite liberally.

Advent of the Electric Portable Sewing Machine.

When the dealers began to retail the new machine, however, they found a somewhat different proposition than was involved in the selling of other appliances. They found that it required more knowledge of the sewing machine than the average dealer possessed and, also, that the application of the motor was of a more vital nature

Method of Mounting Belt-Drive Sew-Motor on Foot-Power Machine.

and required more attention than it had hitherto received.

Another factor that made it difficult for the electrical dealer to sell the first portable sewing machines on the market was the problem of taking up old foot-power machines in exchange. Since the increase in the number of sewing machines in use in the home depends largely upon the increase in the number of new households established through the increase and development of the population, the number of prospective purchasers who do not already possess an old machine is rather limited. Therefore, the success of sewing-machine merchandising depends largely upon the replacing of old, worn or out-of-date machines in the older households.

The electrical dealers who have been pioneering the electric portable sewing machine have not had an arrangement with the manufacturer or jobber that would permit them to rebate a customer for an old machine of another make. Seldom could a dealer close a sale unless he took the old machine and allowed a discount of approximately 10% on the price of the new machine. If the dealer sought to add 10% to the price of the new machine so he could take up the old one and throw it in the scrap pile, he found

himself in danger of confused price maintenance and the competition of other makes that had been recently motorized but were still being sold through the old agency system. Many an electrical dealer soon found the waters of sewing-machine merchandising so deep and dirty that they gave up the attempt and refused to handle them until the evolution of business reduces the chaos to a semblance of order and system that will either leave to the electrical dealer the handling of the present electrically adapted sewing machines, or the production for the electrical trade of a newer and more highly efficient type of electric sewing machine.

Development of Sewing Machines for the Electrical Trade.

Indeed, one manufacturer with an unusually clear vision of the future has, with the co-operation of engineers of a large electrical appliance concern, produced an entirely new sewing machine with a built-in motor which is now being placed upon the market through electrical jobbers for retail exclusively through electrical dealers. This is a forerunner of what may be expected in the future development of a sound merchandising system for the electric sewing machine.

With the advent of the portable electric sewing machine was developed a demand for the electrification of those foot-power machines already in use. This resulted in the perfection of the small household motor of the universal type, sometimes called "sew-motor" by the trade. Several manufacturers have placed these motors on the market, both through the old-line sewing machine agencies and through the electrical jobber and dealer channels. Practically every electrical dealer now handles the sew-motor and is prepared to attach one to any make of sewing machine.

The old-line agencies equip some of their machines with these motors and handle them side by side with the foot-power machines. Since some of the old companies have abandoned the agency and house-to-house sales policies, they now sell through department stores or establish a chain of small stores in the larger cities and a single store in the smaller cities, making use of newspaper advertising and mailing lists. These motor-equipped machines had not been long on the market until it was found that, through lack of attention or proper understanding, the customer would frequently damage the motor. This required the attention of a practical electrician. To meet this situation in some instances a motor repairman is regularly employed; in other instances where there is not sufficient work to keep the repairman busy the damaged motor is sent to a regular electrical shop or to the manufacturer.

Demonstration of Sew-Motor in Operation on a Standard Foot-Power Machine.

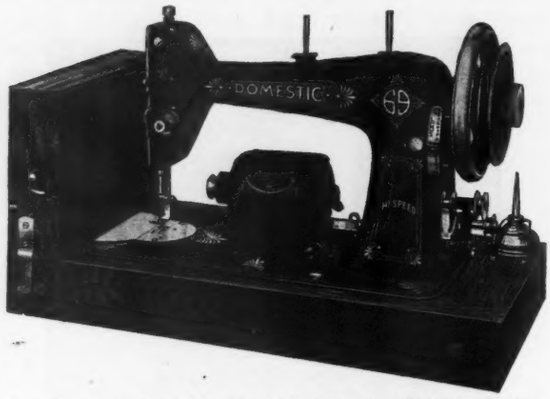
Demonstration Showing Manner of Folding Motor and Closing Machine.

Special Training Required to Sell Sewing Machines.

This is where the electrical dealer has the advantage of the regular sewing-machine store or agency. The former is first an electrician and can give competent instruction as to the care and use of things electrical. He is much better equipped to handle such repairs than even the sewing-machine store that employs a repairman. When the electrical dealer obtains the equitable merchandising arrangements to which he is entitled, and will overcome his lack of knowledge of the art of sewing and of sewing-machine mechanism, he will outdistance the old-line agent because he will, every time he sells an electric sewing machine, also sell the electrical idea, which means more and better business for himself and the industry generally.

Many electrical dealers are prepared to meet the necessity for special training in the sale of electric sewing machines by employing saleswomen who are thorough seamstresses. These will be instructed as far as practicable regarding

the electrical features of the machine and the art of combining their skill in sewing and knowledge of the application of electricity in salesmanship. Other dealers have already begun to apply their



One Type of Portable Machine Showing Folding Motor.

spare moments to studying the mechanism of a machine and receiving sewing instructions from a female member of the family. They desire to master every possible phase of their business so that they will be more competent to direct others in their employ as well as meet any question or emergency that may arise in the salesroom.

Referring again to the manufacturer who has developed an electric sewing machine with the built-in motor for sale through the electrical trade, this company has a contract with the jobbers that provides for trained sewing machine salesmen to work with the jobber's salesmen, traveling with them, coaching them how to talk and demonstrate the machine, how to make a window display, and to teach the dealer how to present the machine to the customers to the best advantage. This company has also carried out in the past few months the preliminaries of an

Illustrating Compact Type of Portable Machine in Case.

educational campaign with the dealer and his salesmen. This consists of instructive booklets sent in series at intervals of a few weeks, with letters following each series to bring out some strong points and urging the dealers to gain at least a primary knowledge of the machine.

Among the problems which the dealer will have to solve when he becomes an active merchandiser of sewing machines will be the type of machine best suited to his class of customers. Like the electric washer, the vacuum cleaner and other appliances, there are likely to be presented for his selection various makes that differ chiefly in the setting of the machine and the manner of application of the motor and rheostat control.

Most important to the electrical dealer, however, is the necessity of immediate co-operative action looking to protection and advancement of his interests, and those of the electrical industry in general, by securing such readjustment of merchandising policies as will assure adequate profit and an unrestricted field in the retailing of electric sewing machines. Unless electrical dealers can secure such policies, the present unsettled condition of the sewing-machine business may result in many dissatisfactions among users of electric sewing machines and consequent damage to the electrical appliance trade in general.

EDUCATE PUBLIC IN USE OF ELECTRICAL EQUIPMENT.

The misuse of electrical devices for the service desired was given as the cause of the greater portion of actual fire losses due to electrical causes by F. J. T. Stewart, president of the National Fire Protection Association, in an address before the recent annual meeting of that organization. He stated that analysis of the information available placed the greater portion of the blame for the misuse of devices upon the user who relies on his own judgment or who takes a chance contrary to good advice or in absence of such advice. In any event the trouble experienced is laid to carelessness rather than to the lack of good and proper materials and equipment. A creditable effort had already been made by the electrical industry, he stated, to prepare and circulate leaflets containing well-illustrated descriptions of precautions that should be taken in the use of various devices and their connections. It was his recommendation that the educational work should be carried on constantly and that such leaflets as were available, or as could be of service, should be presented to the public.

LAMP WITH ROTATING ARC DEVELOPED IN FRANCE.

A French inventor has recently developed a rotating arc lamp in order to approximate as closely as possible the theoretical point source of light, fully utilized and automatically maintained. His arc lamp uses a cored carbon rod of much the ordinary type as positive electrode, which provides the luminous crater. The non-luminous negative electrode is a metallic ring surrounding and presenting its inner edge toward the crater; the ring is cooled by circulating water or spirit. By the action of the magnetic field of a coil the arc between the crater and the inner edge of the ring is caused to rotate at 500 to 3000 revolutions per minute. The rotation is too rapid to be distinguished by the eye, and the arc only appears as a highly incandescent spot surrounded by a bluish halo. Only the positive electrode burns away and need be moved; this regulation is controlled by the dilation of a metal strip, and is independent of the arc current and voltage.

Chicago Dealers Exchange Visits and Sales Ideas

Fine Example of Co-operation Developed by Contractor-Dealer Organization Through Interchange of Ideas and Constructive Criticism During Inspection of Member Stores and Workshops

Is it possible for the contractor-dealer to profit through the sincere fellowship derived from earnestly organized efforts? Can an organization of contractor-dealers develop better merchandising conditions through the intimate interchange of ideas and constructive criticism regarding store arrangement and displays? Members of a Chicago organization have found an affirmative answer to these questions. Their plan offers a suggestion to every similar organization in the country. It is a plan in which the benefits derived by the individual assure the prosperity and advance the interests of the organization and the electrical industry as a whole.

Recently the Electrical Contractors' Association of Chicago decided at a merchandising session to make a tour of the member stores for the purpose of gathering better ideas in store arrangement. It was also proposed to assist certain members who courted suggestions for the improvement of their floor plans and merchandise displays. The junket, participated in by a representative of each of the member firms, developed excellent results for this form of co-operation and fellowship.

Nearly every store visited by the delegation disclosed one or more special features in its arrangement worthy of consideration by other dealers. Constructive criticisms and suggestions were offered and welcomed in the wholesome spirit of brotherhood. Consideration was given to location, dimensions of the stores, class of trade and other features that vary with the sections of the city in which the different stores are located.

Special Features of Electric Stores.

At the Calumet Electric Shop the party found merchandising arrangements as nearly ideal as possible under the conditions of location and dimensions of the building. The chief features of this store are the shadow-box display of lighting fixtures and the accessory display case. This store was fully described in the May 29 issue of Electrical Review, and a diagram of its floor plan was presented in the June 26 issue.

At the Beverly Electric Shop one of the features is the great expanse of show window. This store occupies a commodious, one-story building at a corner of intersecting streets. The display windows extend the entire length of both fronts, broken only by the main entrance at the corner. There is room in the windows for the display of a sample of nearly every appliance

Interior View of Salesroom in Odell Electric Shop, Chicago.

handled by the store. Patronage comes from a rapidly growing suburban neighborhood.

The New Home Electric Co. furnished the touring members with the problem of a small, square salesroom with a central entrance, flanked

Interior of Fullerton Electric Shop, Chicago.

by two small show windows. At this place an electric washer was displayed on the sidewalk, but without being connected up for demonstrations. In one of the windows was displayed an electric fan, a household motor, a vibrator and several table appliances, the other window being dressed with incandescent lamps and fittings. In the store were three rows of lighting fixtures suspended from the ceiling, while the bowls were arranged on a table. Behind the wrapping counter in the rear were shelves filled with package goods. The office consists of a roll-top desk in a front corner next to the show window. More space is given to the workshop, which occupies a larger room in the rear of the salesroom, and is well equipped with materials ready for wiring jobs.

Odell Electric Shop is one of the largest contractor-dealer stores in the Chicago association. It occupies two storerooms on a busy thoroughfare, one of them 125 ft. long and the other 65 ft. long. The shorter room, with a separate street entrance, is given over to a battery service station, where all makes of batteries are recharged and repaired. The longer room is divided in the middle, the front half being occupied by the salesroom and the rear half by the stockrooms and workshop.

Store Arranged by Departments.

As far as possible the Odell store is arranged by departments. The street entrance is at one side, giving an unbroken expanse of show window. Directly inside the entrance is the department for large appliances. Beyond that is the portable lamp department, with the stock displayed on tables. Along the wall opposite the appliance department are glass-front cases and open shelves stocked with package goods, and in front of them are the wrapping counter and showcases containing small appliances. Opposite the portable lamp department is the glass-inclosed office. The rear portion of the salesroom is occupied by the lighting fixture department, containing six rows of fixtures suspended from a false ceiling.

From the rear end of the salesroom a passageway at one side leads past a stockroom to the workshop. The stockroom, though small, is shelved to contain a large stock of bowls, domes and canopies for lighting fixtures. One of the

General View of Fixture Balcony of Grayland Electric Shop, Chicago.

View of Double Front of Meade Electric Co.'s New Store, Chicago.

features of the workshop is an open stockroom, or cage of wire netting, equipped with shelves, drawers and pigeon holes for fittings and wiring supplies. A check and invoice system is employed in this stockroom similar to that in vogue in toolrooms of large machine shops and industrial plants.

The Neighborhood Shop disclosed another small, square salesroom presenting a well-arranged but rather congested appearance. Lighting fixtures are suspended from a rack covering the entire ceiling, while shelving and a counter occupy one side of the store. The remainder of the space is taken up with household appliances, with the office occupying a small alcove in the rear.

Shadow Boxes, Cutouts and Sidewalk Displays.

At the store of the Mid-City Electric Construction Co. the touring contractor-dealers again found the shadow-box feature in use for the display of lighting fixtures. Here the compartments of the shadow box are larger than those in the Calumet Electric Shop, the interiors are painted with flat-black, bringing out the details of the bowls with maximum distinctness. The Mid-City store has a very narrow front and the street entrance is unusually deep; the center of the front is flanked by show windows of equal depth and dressed to face on the entrance rather than the street. The window displays were augmented by cutouts. The front and interior of this store, despite its rather long and narrow dimensions, presents an inviting appearance to the public.

One of the features of interest found by the visitors at the store of the Meade Electric Co. was a sidewalk demonstration of an electric washer. The washer is stationed at the curb beside a telephone pole, electricity being carried by insulated wires stretched overhead from the store to the pole, thence down to the washer. The motion of the washer proves a good attraction, particularly in the evening and on Saturday afternoons when the street crowds are largest. This store occupies two fronts, one room being utilized for the display and demonstration of the large household appliances, including washers, domestic electric ironers of the mangle type and vacuum cleaners. In the rear of this room the dealer is fitting up a special room for the display of lighting fixtures. The other main room is used as a general salesroom for small appliances, fittings and package goods in wall cabinets.

Unusual Displays of Lighting Fixtures.

The Cody Electric Co. employs a distinctive arrangement for displaying lighting fixtures, patents covering which are being applied for. Two rows of five pillars each extend about half the length of the store, the aisle between the rows

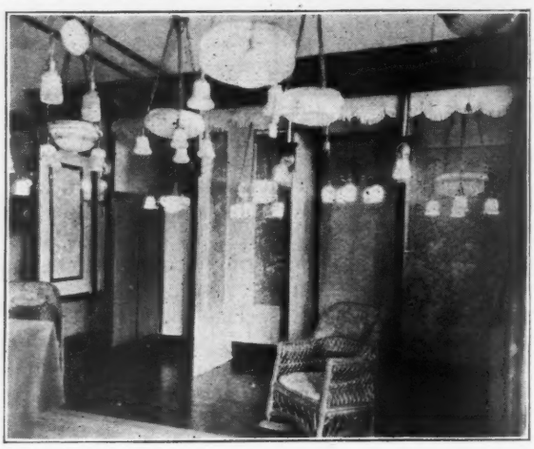
Display of Lighting Fixtures in Store of Cody Electric Co., Chicago.

forming the center aisle of the store, with another aisle on either side of pillars. Each pillar is square and hollow, and inclosed with glass for a space of about 5 ft. between the floor and the top of the pillar. The pillars are about 11 ft. high, each surmounted by a pagoda-like square

cap that extends approximately 3 ft. on all sides. This cap is flat on the under side and from it on each of the four sides of the ten pillars is suspended a fixture—40 fixtures in all. These fixtures are arranged so that a pair of the same style—one fixture with a diffusing bowl alone and the other with pendants attached—is shown hanging side by side from either direction. The fixtures are all wired for lighting demonstrations.

The handsomely grained woodwork of the pillars is stained Flemish green. The glass-inclosed sections of each pillar are fitted with glass shelves on each of which rests a single table appliance such as a percolator, toaster, casserole or flatiron, lighted by concealed lamps in the upper part and in the base of the pillar.

Another feature of the Cody store is a shelving rack about 5 ft. high and extending about 25 ft. along the left wall. One shelf is flat and



Fixture Booths on Balcony in Grayland Electric Shop.

the other inclines toward the wall. Upon these shelves are displayed bowls with lamps under them for demonstrating purposes. The base of this rack contains drawers for fittings and accessories. The woodwork of the rack is stained green to match the scheme of the pillars. Shelves filled with package goods and in front of them a wrapping counter, occupy one side near the front of the store. A large basement is given over to the workshop and storeroom.

At the store of the Grayland Electric Co. another unique arrangement is employed for the display of lighting fixtures. At the rear of this store is a balcony, the floor of which is about 3 ft. higher than the main floor. A balustrade extends from either side along the front of the balcony to a wide stairway of three steps in the center. One side of the balcony is occupied by a row of booths about 8 ft. high, each booth 3 ft. wide and 3 ft. deep, open in front. The interior of each booth is finished with a different decorative scheme in miniature, to represent a room. From the ceiling of each booth is hung a sample dining-room lighting fixture wired for demonstration.

On the opposite side of the balcony is a row of cubicles attached to the wall near the ceiling but not extending to the floor. The bottoms and front of these cubicles are open, and parlor fixtures are suspended from the top. Other fixtures are suspended from the ceiling of the balcony. A table in the center of the balcony displays portable lamps. Ample daylight is admitted to the store through the front show windows and through three windows in the rear of the balcony.

The Grayland store has a central street entrance with show-window space on either side. A basement extending beneath the entire store contains a well arranged workshop and stockroom, the latter being caged off with woven wire and provided with commodious shelves for lighting bowls and other fragile ware.

Fullerton Electric Shop presents the aspect of a small jewelry store or silversmith's shop except for the display of familiar electrical appliances in the window and on the floor. This store is very narrow, little more than an ordinary aisle remaining between the glass-front shelves and wall cases. The workshop is located in another building on a side street nearly a block away from the store.

But one or two appliances occupy the floor in the Fullerton Shop at one time, and these are displayed just back of the show window beside the entrance. One side of the store is occupied by a deep glass-front case in which are shown small appliances lighted by concealed lamps. In the base of the case are drawers containing the fittings and accessories, while a row of bowls, tilted upon an inclined board, occupy the top of the case. The shelves inclosed in glass on the opposite side are narrow and display small articles on a base and backing of dark velvet. The office is in the rear of the store. A private telephone connects the store and workshop in addition to the regular telephone connections in both places.

HYDRO-ELECTRIC POWER COMMISSION ISSUES REPORT.

The twelfth annual report of the Hydro-Electric Power Commission of Ontario for the year ended October 31, 1919, has been distributed by the commission. The volume, which is illustrated and contains 287 pages and maps, comprises seven sections devoted to the different phases of the work of the commission. The different sections relate to legal proceedings, transmission systems, operation of systems, electrical engineering and construction, power construction, municipal work, and general activities of the commission. One of the interesting sections of the report describes the electrical testing laboratories in which testing and research work is conducted.

HYDROELECTRIC DEVELOPMENT TO BE MADE IN JAPAN.

Among the new hydroelectric power companies, the formation of which in Japan has been hastened by the high price of coal, is one with a capital of 50,000,000 yen, which has taken over the water-power rights of three old companies. It is proposed to begin with the generation of 105,000 kw., the works to be completed in two years, but eventually the output will be raised to 300,000 kw. The two electric light companies of Osaka and Kyoto have agreed to take all the power they require from this new company.

Notable Progress in California's Electrical Campaign

Co-operation of Contractor-Dealers and Other Branches of the Electrical Industry on Pacific Coast Results in Four Model Electrical Homes — Architects and Builders Help in Campaign

California's magnificent electrical campaign, the result of co-operation of contractor-dealers, jobbers, manufacturers and central-station companies organized into the California Electrical Co-operative Campaign, now has four model electrical homes to its credit. Additional results of the campaign this year are indicated by the large increase in the membership of the California State Association of Electrical Contractors and Dealers, the more modern arrangement of electrical stores and window displays and the vast amount of profitable newspaper publicity throughout the state.

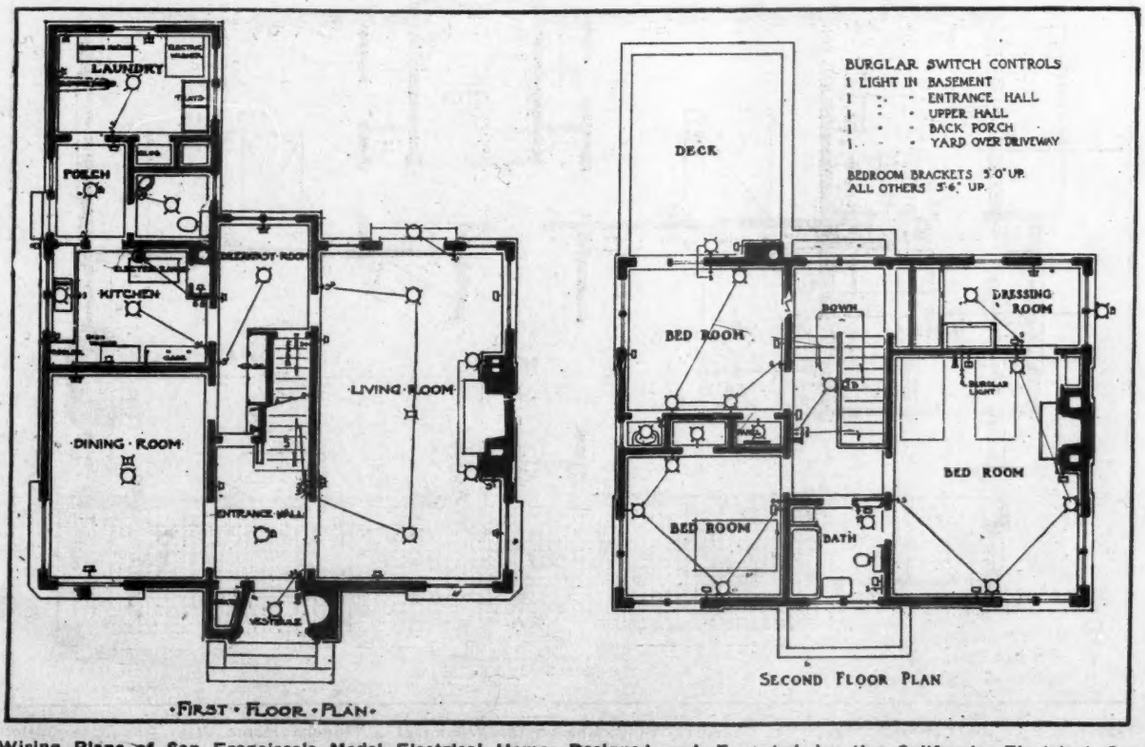
Emblem of California Campaign.

The first of the model electrical homes was opened for inspection by the public in San Francisco late in May. The second home was opened a few days later in Sacramento. In June the third and fourth homes were opened in Los Angeles and Oakland. These model electrical homes demonstrate the practical convenience of a home wired for the use of every variety of labor-saving electrical appliance. The plan under which this work was accomplished was most comprehensive and the cost was negligible

Through the efforts of the workers in the California Electrical Co-operative Campaign it was possible to find in each case a building contractor who would follow the wiring plans provided by the campaign in his construction of a new home. If the home was being built for a real-estate company for sale after construction, it was necessary to gain permission of the real-estate company and its architect to change the original wiring plans. If the home was being constructed for a person who had purchased a lot and intended to occupy the house upon completion, it was necessary to secure his consent to the revision of the wiring plans.

When the house was completed and wired according to campaign specifications, members of the campaign secured permission to completely furnish the house and install the electric fixtures and appliances. Then publicity was procured in the newspapers, by circulars and through placards and invitations issued by contractor-dealers announcing an opening date and specifying the number of days or weeks that the model electrical home would be open for inspection by the public.

At the end of the period of public inspection those fixtures and appliances which the owner of the new home did not wish to purchase were re-



Wiring Plans of San Francisco's Model Electrical Home, Designed and Executed by the California Electrical Co-operative Campaign.

moved and the house turned over to him. While no report has been made on these details, it can readily be seen that such an arrangement should not only result in sales of most of the appliances and fixtures to the owner, perhaps at reduced prices, but each appliance on display in the model electrical home is well advertised to those visitors who call there in quest of electrical information. The idea of the campaign, however, is to sell the electrical home idea rather than to set forth the good points of the particular appliances that happen to be used in the demonstration.

The model electrical home in San Francisco is, as it should be, the most completely wired and electrically furnished home in the city. It shows more forcibly than any other plan yet evolved the benefits to be derived from the use of electricity, and the number of ways it can be utilized toward solution of the servant problem. The house has 110 outlets and every room is fitted with standard electrical appliances, there being 25 different appliances in the installation. Following is a list of the appliances and where they are installed:

KITCHEN.—Electric range, utility motor, circular water heater, dishwasher, waffle iron and percolator.

LAUNDRY.—Washing machine, ironing machine, No. 6 electric flatiron and No. 3 electric flatiron.

BREAKFAST ROOM.—Vacuum cleaner, samovar, chafing dish, portable heater, combination grill, toaster and percolator.

BATHROOM.—Portable heater, electric vibrator, electric curling iron, electric shaving-cup and electric hair-dryer.

BEDROOMS.—Electric sewing machine, vacuum cleaner for upstairs cleaning, hot-water cup, heating pads, portable heater and wall-type air heater.

In addition to the appliances, special attention was paid to the illumination of the various rooms by modern lighting fixtures.

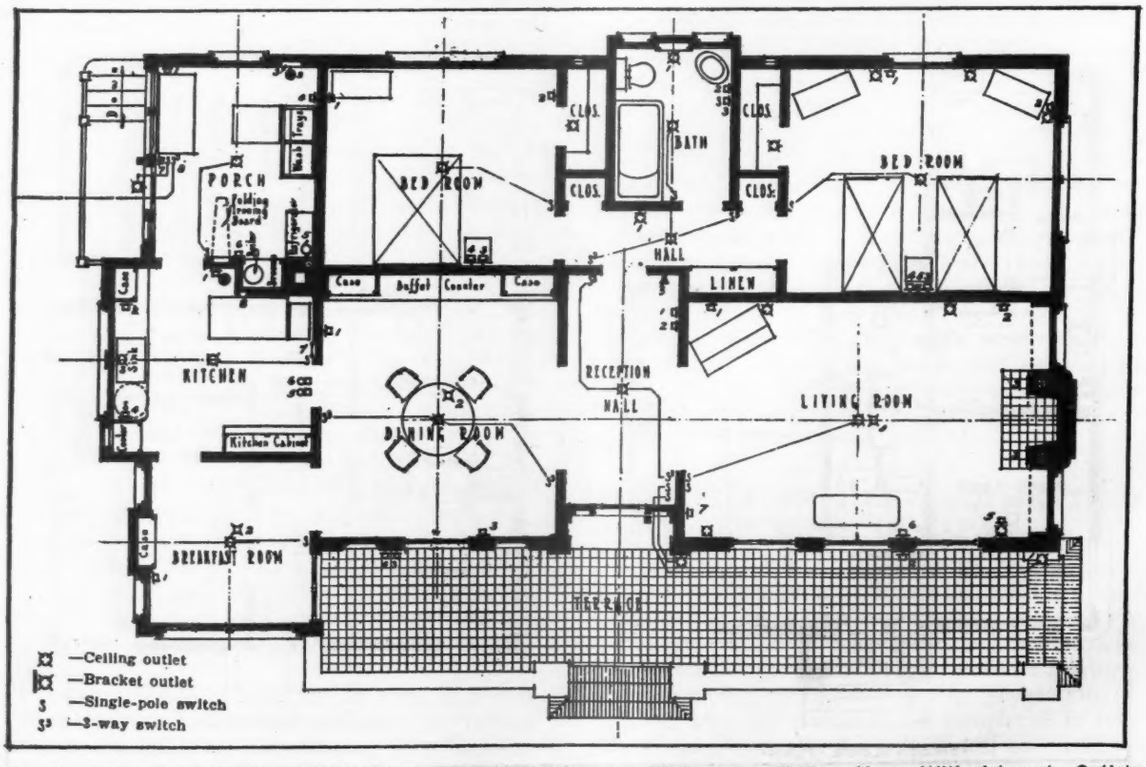
The same thorough electrical installation obtained in the model homes later opened in Oakland, Sacramento and Los Angeles. Arrangements are being made for similar model homes in San Diego, Stockton, Fresno and other California cities where there is sufficient building in progress to warrant extension of this feature of the campaign.

CO-OPERATION WITH ARCHITECTS AND BUILDERS.

One of the most effective means of spreading the gospel of more convenience outlets in the California campaign has been found in the winning of the co-operation of architects and building contractors. Not only does the California Electrical Co-operative Campaign circulate through the contractor-dealers many copies of suggested plans for wiring a modern home, but engineers of the campaign are prepared to collaborate with the architects in the designation of proper outlets on building plans in course of preparation.

It is a part of the California campaign to discourage as much as possible the use of lighting outlets and sockets for the attachment of electrical appliances. This is being accomplished by the missionary work of the campaign among the architects, builders, decorators and lighting specialists. It is pointed out to them that the use of the sockets for attachment of appliances is not only unsightly but often dangerous, thus inducing them to the viewpoint of additional convenience outlets.

"Comfort and Conveniences of Electricity in Your Home" is the title of a well-illustrated



Plan No. 2 of the California Electrical Co-operative Campaign for Wiring of a Modern Home With Adequate Outlets for Use of Household Appliances.

booklet recently issued through the contractor-dealers in the interests of the campaign. With the booklet is a copy of Plan No. 2, for the wiring of a modern home. These are placed in the hands of home owners and prospective home builders. Plan No. 2 contains the following list of convenience outlets, the number in the list corresponding to a number designated on the plan as reproduced with this article:

PORCH.

(1) Outlet for ironing machine motor—up 3 ft.
(2) Bell ringing transformer.
(3) Cutout and fuse cabinet.
(4) Outlet for washing machine—up 3 ft.
(5) Outlet for refrigerator motor—up 6 ft.
(6) Outlet for electric flatiron—up 3.5 ft.
(7) Outlet for ironing machine heater—up 3 ft.
(8) Switch for garage light.

KITCHEN.

(1) Outlet for water heater—up 18 ins.
(2) Outlet for utility motor.
(3) Bracket light over sink.
(4) Outlet and switch for dishwasher.
(5) Front door bell.
(6) Back door buzzer.
(7) Switch for range—up 4 ft.
(8) Range outlet—up 30 ins.

BREAKFAST ROOM.

(1) Outlet for heater.
(2) Outlet for toaster, percolator, etc.

BEDROOM (REAR).

(1) Outlet for dresser lights,
(2) Outlet for heater, sewing machine or vacuum cleaner.
(3) Outlet for reading lamp.
(4) Outlet for warming pad or milk warmer.

BATH.

(1) Bracket light over mirror.
(2) Outlet for vibrator, curling iron, hair dryer or shaving mirror—up 4 ft.
(3) Outlet for heater—at base.

BEDROOM (FRONT).

(1) Outlet for heater or vacuum cleaner.
(2) Outlet for curling iron.
(3) Outlet for warming pad or milk warmer.
(4) Outlet for reading lamp.
(5) Telephone outlet—up 12 ins.

HALL.

(1) All-night light.

RECEPTION HALL.

(1) Outlet for vacuum cleaner.
(2) Outlet for portable lamp.
(3) Telephone outlet—up 12 ins.

DINING ROOM.

(1) Outlet for stand lamp.
(2) Floor outlet for toaster, percolator, etc.
(3) Outlet for heater.

LIVING ROOM.

(1) Outlet for piano lamp or phonograph.
(2) Outlet for stand lamp.
(3) Outlet for lights on mantel.
(4) Floor outlet for table lamp.
(5) Outlet for heater.
(6) Outlet for table lamp.
(7) Outlet for vacuum cleaner.

TERRACE.

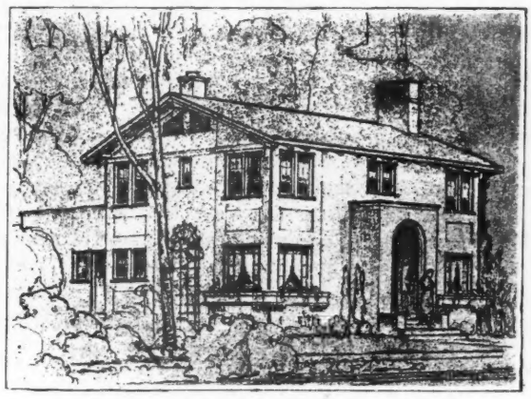
(1) Outlet for illuminated house number.
(2) Outlet for portable lamp.
(3) Outlet for toaster, percolator, etc.
(4) Outlet for lamp or sewing machine.

GARAGE.

(1) Outlet for portable light.
(2) Outlet for bench motor, etc.
(3) Outlet for air compressor.

In the model electrical home in Sacramento there are installed 84 outlets, which number includes those in the garage but does not include the distributing panel, meter or bell-ringing transformer outlets. The outlets are as follows: Eleven ceiling outlets, 18 bracket outlets, 26 wall receptacles, one floor receptacle (the wall and floor receptacles are convenience outlets), 17 one-pole switches, six three-pole switches, two telephone outlets, one outlet and one switch for electric range, and one outlet for electric water heater.

In the model electrical home in Oakland there are 95 outlets, as follows: Thirteen ceiling outlets, 23 bracket outlets, 25 wall receptacles, five floor receptacles (the wall and floor receptacles are convenience outlets), 16 single-pole switches, eight three-pole switches, one outlet and one switch for electric range, one outlet for an electric water heater and two telephone outlets.



Exterior of San Francisco's Model Electrical Home.

While California is making immense progress with its highly organized electrical campaign, the contractor-dealers of other states are watching the work with interest and absorbing much information for future reference. It is admitted on every hand that intensive energy and teamwork like that employed in the California campaign is not only of great benefit to the contractor-dealers of that state, but its effect is sure to reach out even to the other side of the continent.

CONDITIONS AS TO ENGINEERING CONTRACTS IN ENGLAND.

Deliberations have been in progress between the English Association of Consulting Engineers and the Federation of Civil Engineering Contractors regarding the insertion of certain clauses in all engineering contracts. The association has been considering the model general conditions of contract drawn up by the Institution of Electrical Engineers. The consulting engineers take exception to the view that electrical work requires a different set of conditions from those in force for other work. The difference of view is practically a pre-war one, and the subject has now been reopened, the Institution of Electrical Engineers having revision of the clauses in hand. The view of the Association of Consulting Engineers is that eventually the electrical conditions of contract will come into line with the general conditions that are inserted in civil engineering contracts.

Single-Phase Induction Motor Windings

Description of Method of Installing and Connecting Coils of Split-Phase Induction Motors and Method of Producing the Rotating Magnetic Field—Automatic Starting-Coil Release

By JACOB GINTZ

Single-phase motors require special features of design to provide for starting. The two methods which are used in most of the modern types of such motors are known as the split-phase and the repulsion methods. The split-phase method utilizes the fact that currents of different phase position may be taken from a single source of supply through receiving circuits of different inductance. By placing two windings on the stator of an induction motor, and applying

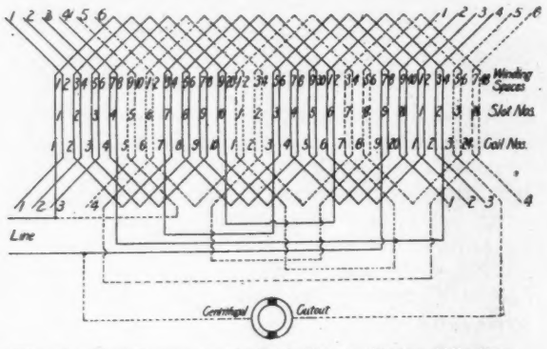


Fig. 5.—Development of Split-Phase Stator Winding.

two-phase current to the windings, the motor may be made to start without other special arrangements. However, if only single-phase power supply is available, some arrangement must be made to take current of different phase positions from the single-phase supply. In the split-phase motor this is accomplished by installing the two windings of different inductance, and starting the motor as a two-phase machine supplied with current from a single-phase source of power. The rotor for this type of motor is similar to the rotor of an ordinary induction motor for polyphase operation.

Single-phase motors of the repulsion type are made self starting by special design of the rotating element, the stator having only a single-phase winding. The rotor winding is arranged similar to the winding of a d-c. armature and is connected to a commutator in the same manner as with a d-c. motor. However, the brushes are not connected to the supply lines, but are short-circuited, the stator only receiving outside power. A four-pole, split-phase stator winding having a total of 24 coils, 16 coils comprising the running winding, is shown in the illustration, Fig. 5. The 16 running coils are shown in full lines, the remaining eight coils shown in dotted lines being the starting winding. This winding is divided into as many groups as there are poles. In practice this is called a whole-coil winding because the number of groups of coils and the number of poles are equal. The winding or coil pitch is expressed in the number of winding spaces that the opposite sides of the coil are apart, and the number of winding spaces per slot depends on the number of coils per slot. In the above winding there are two layers or two coils per slot, so there will also be two winding spaces per slot.

The winding or coil pitch is found by the formula,

$$Y = \frac{C \times 2}{P}$$

where Y = winding or coil pitch. C = number of coils to be placed, and P = number of poles.

If Y is found to be an even number it must be made odd by adding or subtracting one. Then,

$$Y = \frac{C \times 2}{P} = \frac{24 \times 2}{4} = 12 \pm 1 = 13 \text{ or } 11.$$

The accompanying table shows the manner in which the coils have been placed in the slots.

TABLE SHOWING LOCATION OF COILS IN SLOTS AND SPACES.

Coil number.	In winding spaces.	In slots.
*R 1	1 and 14	1 and 7
R 2	3 and 16	2 and 8
R 3	5 and 18	3 and 9
R 4	7 and 20	4 and 10
*S 5	9 and 22	5 and 11
S 6	11 and 24	6 and 12
R 7	13 and 26	7 and 13
R 8	15 and 28	8 and 14
R 9	17 and 30	9 and 15
R 10	19 and 32	10 and 16
S 11	21 and 34	11 and 17
S 12	23 and 36	12 and 18
R 13	25 and 38	13 and 19
R 14	27 and 40	14 and 20
R 15	29 and 42	15 and 21
R 16	31 and 44	16 and 22
S 17	33 and 46	17 and 23
S 18	35 and 48	18 and 24
R 19	37 and 2	19 and 1
R 20	39 and 4	20 and 2
R 21	41 and 6	21 and 3
R 22	43 and 8	22 and 4
S 23	45 and 10	23 and 5
S 24	47 and 12	24 and 6

*The letters R and S in front of the coil numbers represent running or starting coil.

After all the coils have been placed in the slots they are paired into groups by using the following formula:

$$N = \frac{C \times 2}{P \times Ph \times 2}$$

where N = number of coils per group, C = num-

ber of coils, P = number of poles and Ph = number of phases.

Then $N = \frac{24 \times 2}{4 \times 1 \times 2} = 6$ coils per group.

Of these six coils per group there will be four running coils and two starting coils, the groups of running and starting coils being connected in series, each winding being separate from the other. When all coils have been connected in groups the groups are then also connected together, forming two separate windings much like the winding of a two-phase motor. However, it must be remembered that the two windings are not identical as they are in the two-phase motor, but one winding has 16 and the other 8 coils.

Connections for the running winding are as follows: The beginning of group No. 1 is one of the line terminals, the end of group No. 1 is connected to the end of group No. 2, the beginning of group No. 2 connects to the beginning of group No. 3, the end of group No. 3 connects to the end of group No. 4 and the beginning of group No. 4 is the other line terminal. The starting winding is connected in exactly the same manner as the running winding, but its connection to the line is somewhat different. In the running winding the beginnings of groups Nos. 1 and 4 are connected directly to the source of supply, while only one end of the starting winding is connected directly to the line, the other end being connected to the centrifugal switch or cutout. This centrifugal switch or cutout is made in different ways, the details of which are shown in Figs. 6, 6a, 7 and 7a. When the rotor is at rest the contact clips or fingers are in the positions shown in Figs. 6 and 7, while Figs. 6a and 7a show their positions when the rotor is in motion. It will be seen in these figures that as long as the contact clips or fingers are resting on the segments in Fig. 6, or on the rings in Fig. 7, the starting winding circuit is closed, and current will flow through both windings. As the starting winding is wound with a smaller size wire than the running winding, it will be of a greater inductance and cause the current to lag. This will result in a rotating field, on the same principle as explained in a previous article, and thus cause the rotor to start and come up to speed.

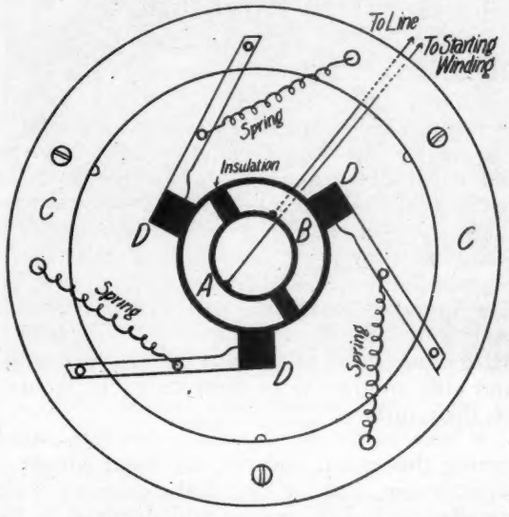


Fig. 6.—Starting Clips in Position With Rotor at Rest.

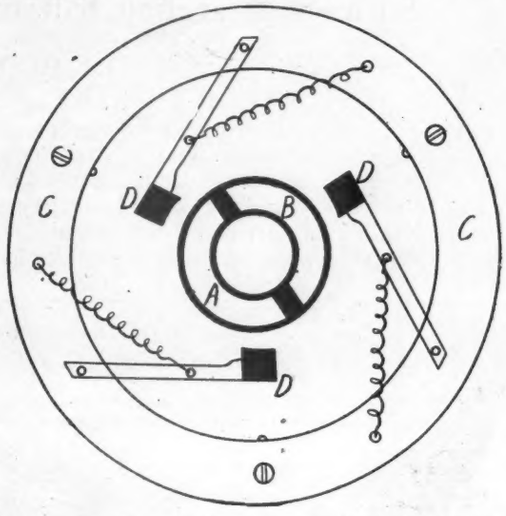


Fig. 6a.—Starting Clips in Position With the Motor in Operation.

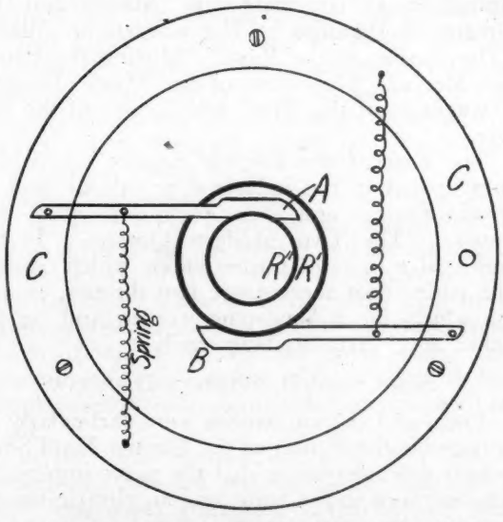


Fig. 7.—Starting Clips in Position When Ring Contacts Are Used.

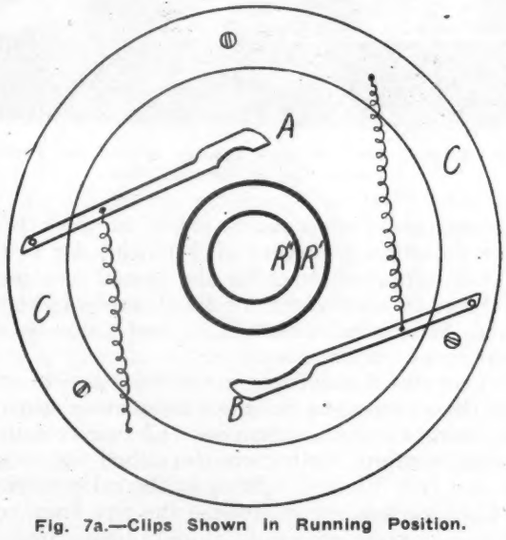


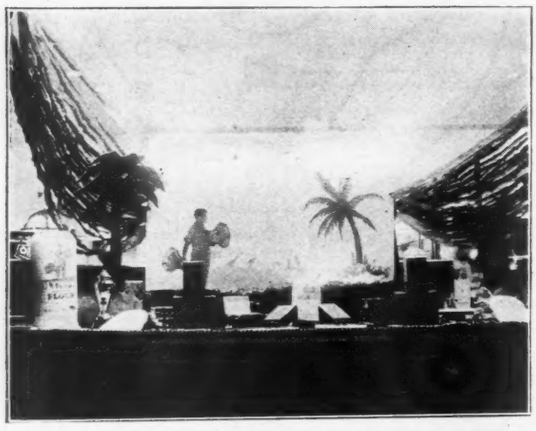
Fig. 7a.—Clips Shown in Running Position.

Portland Electrifies to Receive Convention Visitors

Contractor-Dealers of Oregon's Metropolis Play Important Part in Transformation of City Into Electrical Paradise for Shriners, Traveling Salesmen and Visitors to Rose Festival

By W. B. STODDARD

Electricity was so interwoven with every part of the features and decorations of the Mystic Shrine convention in Portland, Ore., recently as to transform that staid occidental city into a dream of fairyland surpassing the magnificence of an oriental paradise. In fact the Portland



The Electric Shop Window Display During the Shriner Convention in Portland, Ore.

people outdid all previous efforts in preparation for a continuous period of festivities due to the juxtaposition of dates for the annual rose festival and the convention of the Travelers Protective Association which came just prior to the advent of the Shriners.

Because of the triple event the business men of the city sought the most impressive schemes of decoration to be obtained. Electricity and its many modern applications furnished the means to the end. Electric lighting in the color schemes of the various events flooded the city from center to circumference. Colored lights, fed by storage batteries, were even worn on the headdresses and costumes of many marchers. Wonderful floats that formed features of the different parades were studded with electric lights. All the public buildings, the parkways and public floral gardens, and many of the private residences, lawns and rose gardens were decorated with electric lights instead of bunting. Thus for many weeks Portland was truly an electrical city.

Contractor-Dealers Participate.

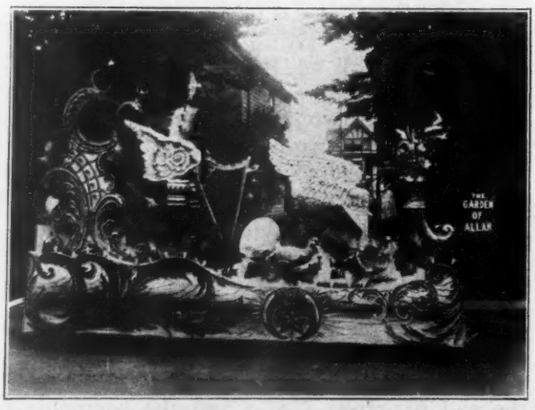
It was a very busy time for the electrical contractor-dealers. They not only participated in the placing of the decorations, but they took advantage of the festal occasion to make the most of floats, window displays and store decorations. For each of the three events the dealers had special decorations appropriate to the occasion. Because of the picturesque costuming and traditions, the Mystic Shrine convention lent itself to the most unique and gorgeous applications of electric lighting. Members of one of the brilliantly arrayed marching patrols wore incandescent lamps on the tips of their shoes, another delegation wore electrically illuminated tunics and still another wore illuminated glass bisons on their turbans.

It was in the two evening electrical parades during this event, and the industrial parade the week before, that the electrical contractor-dealers excelled in the decoration and displays on their own floats and the lighting of the other floats. Among the electric floats were "Aladdin and His Dream of Paradise," "The Garden of Allah," "The Shrine of the Rose," "Hitting the Sands for Mecca," "Guardians of the Mystic Jungle," "Daughters of the Nile," and "Oases of the Pacific."

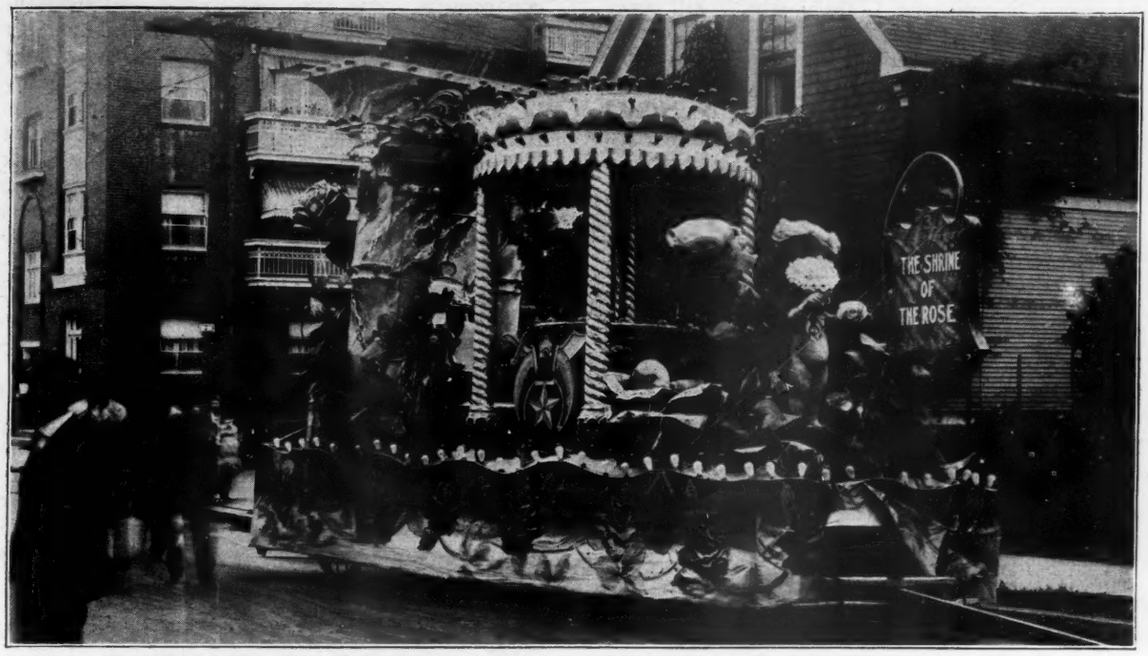
The float of the Electric Service Co., which participated in the industrial parade as well as in the Shriner and Rose Festival parades, was entitled "The Two Modern Queens." In the midst of a mass of purple lupine which covered the entire float there arose two thrones, on one of which sat a handsome woman and on the other an electric washing machine.

Some Special Window Displays.

Local and visiting women were particularly interested in the display of the Electric Maid Shop, which was everything that the name implies. In the entrance to the store was an electric washer



Light-Studded Float, "Garden of Allah," in Shriners' Parade, Portland, Ore.



One of the Gorgeous, Light-Studded Floats in the Electrical Parades in Portland, Ore., During the Convention of the Mystic Shrine, the Rose Festival and Travelers Protective Association Conclave.

busily churning up a billow of white suds. On the inside demonstrations were given of vacuum cleaners, electric ironing machines and many table appliances. A special window display arranged for the Mystic Shrine convention disclosed a floor of fine sand on which were distributed a number of toy camels and kewpie dolls each wearing a red fez. In the background was an electric washer with a wringer attached from which fell to the floor a waterfall of ribbons in the Shriner colors.

The Northwestern Electric Co. had in front of its store three large street lights with one globe colored red, one yellow and the other green —the colors of the Shriners—while the large electric sign, "Cook by Wire," had each of the three words outlined in one of the three colors. Each of the show windows had a scenic background depicting a desert, in front of which were displays of various local products of manufacture.

In the show window of the Electric Store a desert was depicted, on a cardboard background, with long paper streamers of the Shriner colors falling to the floor. Down in front were packages of cereal from a local concern, mingled with which were electric waffle irons, grids, toasters, percolators, samovars and other cooking appliances, suggesting the modern methods of preparing a meal without heat or fatigue.

During this period of festivities in Portland, Third street was completely arched over with streamers and arcs of red, yellow and green lights, while other leading business streets were hung with garlands of evergreen, studded with thousands of small electric lights, each covered with a red fez. On the last day of the Shriner convention a huge electric sign over the entrance of a prominent building blazed out a cordial farewell and a hearty invitation to return.

Many who visited Portland during the event say it was the most stupendous electrical display they ever saw. Among that number were some electrical contractor-dealers who are treasuring several features which they hope to apply at some future time in their own cities.

EXPLAINS POSITION OF FEDERATED ENGINEERING SOCIETIES.

Organization Issues Bulletin Showing That It Does Deal With the Interests of the Individual Engineer.

To combat the statement repeatedly made that the Federated American Engineering Societies does not deal with the interests of the individual engineer and of the allied technologists, the organization has issued a bulletin in which is incorporated part of its constitution, which declares that one of the objects of the organization "shall be to further the public welfare wherever technical knowledge and engineering experience are involved and to consider and act upon matters of common interest to the engineering and allied technical professions."

Continuing, the bulletin states that the purpose of the organization is that of service, first to the nation, state and community, and second to the profession, which obviously must include the interests of the individual. While it is true that the organization does not deal with the interests of the engineer and technologist as does a labor union for its member, nevertheless, so the bulletin states, its work will do more ultimately to advance the interest of the individual than a labor union could possibly do, because the advancement of the profession through a greater recognition by the public of the engineer and allied technologist, and the greatly increased solidarity and higher standards of these professions must unquestionably work for their ultimate good.

The organization will function through the

American Engineering Council which will meet either annually or bi-annually, as it will determine. The council will consist of representatives from the member societies on the basis of one representative for from 100 to 1000 members and an additional representative from each additional 1000 members or major fraction thereof. From this body of representatives will be formed an executive board of 30, consisting of six officers and 24 others members selected in part from the national societies and the remainder from the local, state or regional organizations or affiliations. The plan reported by the committee on constitution and by-laws provided that the representation on the executive board should be based on the ratio of the total number of members in the national societies to the total number of members in the local, state and regional organizations or affiliations. The organizing conference, however, changed this to the ratio of the number of representatives from the national societies to the number of representatives from the local, state and regional organizations or affiliations on the council. This executive board will meet monthly or as often as may be found to be necessary to properly transact the business of the council. There will be an executive officer who will also be the secretary of these bodies and who will be entrusted with carrying out their instructions.

The council thus created is less cumbersome or unworkable than the present Engineering Council and furthermore it has the distinct advantage of being more democratic and broader in its scope and membership.

REVIEWS WORK OF INTERNATIONAL TRADE COMMITTEE.

William Burgess, Adviser to Committee, Tells Associated Manufacturers of Importance of Work Being Performed.

At the recent summer meeting of the Associated Manufacturers of Electrical Supplies at New London, Conn., William Burgess, of Trenton, N. J., adviser to the International Trade Committee, discussed the work of the committee, which was originally appointed as the tariff committee and intended to handle only import matters. In December, 1917, the committee title was changed to the present and its functions enlarged to cover exports as well as imports.

Mr. Burgess said few of the members of the association had been in close touch with the work of the committee and some had even questioned the value of the work being done. He explained that some branches of the electrical industry feel that they are not directly interested in the question of tariff protection because they are independent of foreign competition. Others were only slightly interested, while others are deeply concerned, knowing the grave dangers that confront them particularly from Japan and Germany.

After detailing the work of the committee in obtaining data and information which has now been tabulated and is ready for use by the committee Mr. Burgess took the opportunity of impressing upon the manufacturers the seriousness confronting some branches of the electrical industry and asked the co-operation and support of the manufacturers when the actual tariff fight begins. Referring to the situation in Germany he stated that while it is true that wages in Germany have increased over 500% on the mark basis, it must also be considered that the mark formerly worth 24 cents is now worth only 2 cents, so that the actual wage received amounts to but about 10 cents to the mark, or actually half of what they received before the war, while many of the finished products have advanced 1200% in selling price on the present mark value, thus bringing the present selling price to practically the pre-war price of German goods.

Referring to the Japan situation, he pointed out that ten leading electric wire manufacturing concerns in Japan, according to an article in the *Trans-Pacific*, have recently issued a joint statement to the effect that they have completed their preparations for the production of insulated electric wires and cords to meet the official standards published last October.

CHINA ELECTRIC CO. BUILDS NEW PLANT AT SHANGHAI.

The China Electric Co., organized in July, 1918, has erected a modern factory in the Chapei district of Shanghai, the main building of which will contain 30,000 sq. ft. of floor space and will enable the company to manufacture all of the apparatus and supplies needed for the construction of modern telephone and telegraph systems in China. The company is half owned by the Ministry of Communications of China and half by the Western Electric Co., and a Chinese staff is being systematically trained by the organization, Chinese students of American universities being given a three-year course at the Western Electric Co.'s factory at Chicago before their return to China.

One of Shanghai's important industries is the manufacture of electric lamps, the modern factory erected by the General Electric Co., and conducted by its subsidiary the General Edison Corp., being capable of turning out between 15,000 and 20,000 lamps daily. About 400 Chinese are employed and are supervised by American and American-educated Chinese engineers.

BUREAU OF STANDARDS PUBLISHES PAPER ON THALOFIDE.

The Bureau of Standards has issued scientific paper No. 38 entitled "Spectrophotoelectric Sensitivity of Thalofide," by W. W. Coblentz, physicist of the bureau. In the paper experimental data are given on the spectrophotoelectric sensitivity of Case's preparation of thallium-oxy-sulfid, called thalofide, when exposed to thermal radiation of wave-lengths extending from 0.58μ to 3μ. This substance has a wide unsymmetrical, complex band of photoelectric sensitivity which terminates abruptly at 1.2μ. The effect of temperature was investigated. It was found that, in common with nearly all photoelectric substances thus far examined, the sensitivity increases the most rapidly on the short wave-length side of the maximum. The application of this substance to stellar radiometry is discussed.

EDITORIAL COMMENT

The Electric Sewing Machine Sales Opportunity

There is a crisis in the merchandising situation of the sewing machine at this time, due to the electrification of that essential household utility. It directly affects every dealer in electrical appliances. Developments in sales policy and in the production of new types of electric sewing machines are shaping themselves toward the elimination of old practices in favor of modern business methods similar to those which apply in the distribution of other electrical appliances. To assist in these developments and thus secure to themselves the greatest possible benefit while the time is ripe and the opportunity affords, every contractor-dealer should unite in a well-ordered effort to establish their legitimate position as the logical retailers of the electric sewing machine along with the other electrical appliances.

The present situation is anything but advantageous to the electrical dealers. Many of them are handling sew-motors for attachment to old foot-power sewing machines, and are also displaying and selling a few of the portable types made by the old-line sewing machine manufacturers. Some of them are meeting with a little better success in the sale of a newer type of machine recently developed with a built-in motor for exclusive sale through electrical trade channels. But on every hand they find themselves hemmed in at the present time by unsound competition.

Very few contractor-dealers employ house-to-house solicitation. Most of them have all the contracting work they can handle and they are obliged to be away from the store the greater part of each day. As a general rule, the retailing of appliances by an electrical store is limited to the neighborhood or section of the city in which the store is located and the dealer depends upon customers who come into the store or who have been circularized. In other words, the contractor-dealer conducts his business on about the same principles as those of a grocer, depending largely upon the trade that comes in at the door.

But the old system of selling the sewing machine by house-to-house and "foot-in-the-door" methods, which are beneath the business dignity of electrical contractor-dealers, is not yet extinct. Some of the old-line manufacturers are still clinging to the old agency system, others sell through department stores, still others maintain branch or neighborhood stores or exchanges, but practically all of them are offering motor-equipped machines along with the foot-power machines, and all of them are giving a rebate for old machines which are turned in on the purchase of new ones.

It is that kind of competition which limits the contractor-dealer to the chance sale that results from the occasional opportunity for intensive salesmanship, or to a friendly customer who has been especially satisfied by past service. The average contractor-dealer is also hampered by his lack of knowledge of sewing and sewing-machine mechanism. Should he place house-to-house solicitors in his narrow field he finds a swarm of other solicitors in the same territory who are expert in sewing-machine operation and house-to-house sales methods.

The ideal opportunity for the electrical contractor-dealer would appear to be in the handling of an electric sewing machine of greater perfection, if possible, than the present adaptations; one in which the electrical idea is foremost and which could be handled on the same basis as other electrical household appliances now handled by him. At any rate, the sale and service of the electric sewing machine or the motor-equipped portable or foot-power machine should be left in the hands of electrical dealers, who are better equipped through training and practice to maintain service that will satisfy the customer.

Adequate Home Wiring and Lighting

Wiring of the home for lighting and electrical appliance service requires a thorough understanding of the principles of illumination and a knowledge of the many lighting equipments and utility appliances available if the greatest amount of service is to be obtained for the investment made and for the subsequent cost of serbice. The field of artificial illumination has broadened so rapidly in the past few years that equipment of yesterday is obsolete today, and if new homes are wired in any but the best manner the owner must suffer from the lack of proper equipment that could have been provided at a modest cost.

While the art and science of illumination have progressed in the past few years, the knowledge of certain of the basic elements involved in caring for both present and future needs has not been subject to such rapid development. In fact, men

of broad vision have known for a long time what elements should be provided in order to properly meet the desires and needs of the householder. Articles appearing in recent issues of ELECTRICAL REVIEW have presented the many phases of home lighting in a thorough manner, and have pointed out the desirability of properly caring for this feature of home building. Sufficient and proper illumination is no longer a luxury or a convenience, buf is actually a necessity that cannot much longer be denied the average family. The hours of artificial lighting are no small percentage of the total day, and to limit the value of those hours amounts to almost the same thing as shortening the life of the individual whose time is so restricted. If the provision of adequate light will permit the adding of more useful or pleasant hours within the span of life, then adequate light is truly a fountain of youth.

The washing machine, the fan, the cleaner and the flatiron are now actual necessities in the household, and soon the motor-operated refrigerator and many of the cooking devices and other appliances will come into the same class if, in fact, they may not be so considered at the present time. Many of these devices are both labor and money savers of sufficient merit to warrant their inclusion in a list of the highly desirable furnishings of the home, and many more would fall under the head of conveniences. In planning even the most simple home these present and future necessities should be provided, at least insofar as economy will justify. It is not a difficult task for those trained by experience to foretell where appliances will be used, and so it is not difficult to properly provide for the wiring of a home on a basis that will be satisfactory for a long time to come. Wiring the home for lighting only, and anticipating the use of lighting outlets for appliances, has proven by experience to be unsatisfactory. The appliances are hard to connect in this manner, and such practice often results in damage to the lighting outlet or fixture. The inconvenience of making the connection is at times too great to warrant or even permit the use of labor-saving devices that would be used if proper outlets were available. Again, experience shows that appliances are actually used in homes where provision is made for them.

In the great home-building programs that are now under way and that are to come it should be someone's duty and privilege to see that proper attention is given to the wiring of the houses—houses that will be the homes of the next 25 years. Proper provision for lighting with proper switching arrangements should be made. Floor lamps, table lamps, basement outlets, stairway outlets and appliance outlets all should receive careful attention and be provided in the places where they will be inconspicuous but useful. Some organization should take up this problem and carry it through to its credit and to the good of present and future home builders. The task may be great, but the compensation will be vastly greater in comfort, convenience and economy.

Federating the Engineers

Formation of the American Federated Engineering Societies as an outgrowth of the Engineering Council, which is composed of committees from the American Institute of Electrical Engineers, the American Institute of Mining and Metallurgical Engineers, the American Society of Mechanical Engineers and the American Society of Civil Engineers, is another step forward in gaining for engineers the recognition they need from the public.

The word engineer today means much more in the understanding of the general public than it did 50 years ago. In those days when an engineer was referred to it was generally understood to mean a man on a locomotive or a steamboat. Now it is reversed and the prefix "locomotive" or "steamboat" has to be added when that type of engineer is mentioned; otherwise it will be taken for granted that some sort of technical engineer is meant. That fact alone shows how the profession of engineering has entered into the industry, business and everyday life of the American people.

The engineer has too long been a personage of mystery, one whose work was usually regarded by the public as outside of the general run of industry and of whom little was known. The feverish and hurried manner in which the United States had to prepare for the world war after entering the conflict in 1917 brought the engineering profession to the fore and into the public eye in a way it never had been before. Instead of being regarded by many as merely visionary persons who thought out manners and methods of doing things, the public was suddenly made to realize that the engineers not only thought out how to do things but that they did them and did them speedily, efficiently and in a manner that made the American engineer one of the outstanding figures in the world.

This is a scientific and mechanical age. Rule-of-thumb methods are disappearing in favor of scientific planning and construction brought forward by engineers. As a result, the public is recognizing the important part engineers are playing in modern civilization. And that engineers are also appreciating their importance is suggested by the formation of such an organization as the federated societies which means much when it is developed and functioning properly.

THE WEEK'S NEWS

Reports of Important Meetings, Developments and Other Happenings of the Electrical Industry and Its Allied Interests

PLAN LONG PROGRAM FOR MICHIGAN ANNUAL CONVENTION.

Domestic and Industrial Lighting Exhibition Under Direction of M. Luckiesh and Ward Harrison to Be a Feature.

Although not ready for publication, the program arranged for the annual convention of the Michigan Section of the National Electric Light Association to be held at Ottawa Beach, Mich., Aug. 24-26, promises to be a long one and full of interest to the members who attend. J. K. Swanson, Jackson, Mich., is chairman of the program committee and is being assisted by E. Holcomb, Alma, Mich., and C. C. Munroe, Detroit.

At one of the sessions M. Luckiesh and Ward Harrison of the National Lamp Works of General Electric Co., Cleveland, will give a demonstration on domestic and industrial lighting, which will undoubtedly prove of interest to the delegates.

M. H. Aylesworth, executive manager of the N. E. L. A., will address the convention, speaking particularly on the activities of the association in regard to geographic divisions. The Michigan Section is to join with the electrical associations of Wisconsin, Indiana and Wisconsin in forming the Great Lakes division. Members of the Michigan Public Utilities Commission are also listed as speakers at the convention, while there will be a number of papers and discussions of general technical interest and on sales policy presented at the convention. Herbert Silvester, Ann Arbor, Mich., is the secretary of the section.

ROCKY MOUNTAIN DIVISION FIRST TO ORGANIZE.

States of Colorado, Wyoming and New Mexico Form First Group Under Reorganization Plans of the N. E. L. A.

The Rocky Mountain Geographic Division of the National Electric Light Association was the first division to become organized following the adoption of changes in the association constitution at the Pasadena, Cal., convention in May This division, consisting of the states of Colorado, Wyoming and New Mexico, was organized at the Pasadena convention by representatives from these states, who were authorized to perfect the organization.

The officers of the Rocky Mountain division are as follows: E. A. Phinney, Golden, Col., chairman; E. P. Bacon, Casper, Wyo., first vice-chairman; Arthur E. Praeger, Albuquerque, N. M., second vice-chairman; D. C. McClure, Denver, Col., third vice-chairman, and A. C. Cornell, Denver, Col., secretary-treasurer. An executive committee was also appointed consisting of the officers and three additional members, one from each state in the division, C. M. Einhart, Roswell, N. M.; Judson Bibb, Sheridan, Wyo., and J. A. Clay, Durango, Col., being the men named.

OHIO ASSOCIATION REVIEWS CONDITIONS IN THE INDUSTRY.

Questions of Vital Interest to Central Stations Discussed at Closing Sessions of Twenty-Sixth Annual Meeting of the O. E. L. A.

Merchandising, new business, metering, electric cooking, industrial furnaces and the coal situation held the attention of the closing sessions of the Ohio Electric Light Association, held at Cedar Point, O., July 13-16.

In discussing the electric-cooking situation, J. C. Matthieu, Dayton Power & Light Co., pointed out that the rates for service are not the prime factor in the establishment of a range business. Costs are increasing and rates cannot be reduced below existing levels as an inducement for load that might be secured in such a manner. Range business must be taken at a profit, if taken at all, and further reduced rates are not liable to be profitable.

P. L. Miles, Edison Electric Appliance Co., Chicago, stated there were now 75,000 ranges in daily use in this country and that 50,000 more would be made and sold before 1921. He cited actual instances to show that the establishment of low rates does not of itself secure range business. To illustrate this point, he said Jacksonville, Fla., has a $0.02 rate and only a few ranges, while Miami, Fla., has a $0.049 rate and several hundred ranges. Many cities have but few ranges, either because the central-station management does not believe the range business profitable or because they do not believe the range will prove satisfactory to their customers. Central-station companies in Chicago, Milwaukee, Boston, St. Louis and a number of other large cities are selling ranges because they believe them to be good revenue producers and satisfactory appliances.

Costs and Revenue Derived from Electric Range Connections.

M. W. Arthur, Northern Ohio Traction & Light Co., Akron, presented figures showing the additional investment required on the part of the company to be $45 per range installed. The revenue per installation averaged $80 per year for both lighting and cooking, while the lighting customers averaged only $20 per year. After deducting all charges the range business shows a much higher net revenue per customer than the lighting business. There are now 1200 ranges on the company's lines, 499 having been sold during the past year. Under existing conditions the

additional load is cared for with slight alterations in the distribution systems, while in entirely new territory, laid out for a range saturation of 50%, the excess line construction costs amount to but 16% over the costs to serve lighting only.

Co-operation with the architects was proposed by J. C. Matthieu as a means of having houses wired with sufficient outlets to provide for the use of appliances. L. C. Milnor, Milnor Electric Co., Cincinnati, said: "You must believe in your own community. Organize and campaign for the good of the industry, knowing that he who serves best profits most." Mr. Milnor advocated the organization in a single body of the jobbers, dealers and central-station companies. He also said that only 40% of the appliances were used in homes where convenience outlets were lacking, while 97% were used where convenience outlets were provided. This statement brought out a lively discussion, after which everyone seemed determined to start a convenience-outlet campaign.

Line Costs and Load Derived From Operation of Rural Lines.

The experience of the Greenville Electric Light & Power Co., in serving rural lines was outlined by D. L. Gaskill of that company. Rural lines suitable for the service required cost $750 per mile for 2300-volt and $1000 per mile for 6600-volt construction. Such lines as are required must be built and owned by the community served, if the extension is to be satisfactory to the central-station company. However, in all cases, the extension should be approved as to construction details by the engineers of the company, to assure safety and economy. A 1-kw. transformer has been found to be amply large to serve the needs of the farmer service in the 300 installations connected to the lines of the Greenville company. Transformer losses amount to 15 kw-hrs. per month, while the energy used totals an additional 10 to 15 kw-hrs. per month.

Discussion of the report of the meter committee brought out the statement that meter-testing intervals should not be lengthened. The meter is the cash register of the industry and should be maintained in good working condition.

The Coal Situation in Relation to the Central-Station Interests.

A total of 535,000,000 tons of bituminous coal will be required in this country for 1920, stated George H. Cushing, managing director of the American Wholesale Coal Association, Chicago, in an address before the convention. During the first quarter of this coal year, which began on April 1, 23.7% of the year's requirements were mined and delivered. This is a greater proportion than was ever before delivered, with the exception of the years 1917 and 1918, when figures of 24.6% and 25.4% were reached. According to Mr. Cushing, the people have been badly scared by the bulletins and regulations of the government and have rushed into the coal market, bidding up the price to unreasonable figures. Utility companies have been placed in a bad situation by the rush for coal and the accompanying excessive prices. The central-station company is limited in its returns by rate regulation and consequently cannot meet the great increases in the cost of coal—which is its raw material—without either an increase in rates or a heavy financial loss. Coal enough was being produced to meet the actual needs for fuel, but the demand is far in excess of the supply because of general overbuying or over-ordering of everyone who had the money in hand to spend.

The heat treatment of steel was covered in a paper by R. T. Kaighan, Cleveland Electric Illuminating Co., in which he described the various uses of the electric furnace, including annealing, hardening, tempering, carbonizing, etc. The many advantages of the electric furnace were presented in a convincing manner:

Officers elected for the coming year were: D. J. Hard, Cleveland Light & Power Co., Wooster, president; W. A. Wolls, Columbus Railway, Power & Light Co., vice-president, and D. L. Gaskill, Greenville Electric Light & Power Co., secretary and treasurer. The executive committee elected consists of C. H. Howell, The Ohio Service Co., Coshocton; Robert Lindsay, Cleveland Electric Illuminating Co.; E. L. Franklin, Trumbull Public Service Co., Warren; O. H. Hutchings, Dayton Power & Light Co., and Frank Espy, Ohio Power Co., Canton. The advisory committee is composed of W. W. Freeman, Union Gas & Electric Co., Cincinnati; E. P. Mathews, Dayton Power & Light Co., and J. C. Martin, Ohio Utilities Co., Columbus. O. E. Howland, Dayton Power & Light Co.; L. E. Marshall, Ohio Gas & Electric Co., Middleton, and J. T. Kermod, Cleveland Electric Illuminating Co., were elected as members of the finance committee. The following were elected as chairmen of the various standing committees: Illuminating committee, G. S. Merrill, National Lamp Works, Cleveland; meter committee, S. C. Henton, Northern Ohio Traction & Light Co., Akron; new-business committee, M. H. Lytle, Dayton Power & Light Co., and M. W. Arthur, Northern Ohio Traction & Light Co., Akron; operating committee, H. B. Dates, Case School of Applied Science, Cleveland, and transmission committee, A. M. Wilson, University of Cincinnati.

COAL TRANSPORTATION FACILITIES SHOW IMPROVEMENT.

More Empty Cars Are Reaching the Mines in Most Sections of the Country and Production Shows Increased Figures.

Signs of a positive improvement in car supply, independent of the reduced demand for transportation that always temporarily exists following the closing down of the coal mines for the July 4 holiday, was found in the reports submitted to the United States Geological Survey for the Central and Southern Illinois, Northern Ohio and West Virginia coal fields this week.

Out of 31 districts east of the Mississippi river, reporting to the survey, only six reported a car supply equalling 80% of normal, the Central Illinois field being one of these. In nine districts the supply was about 50% of normal, six reported about 55 to 60%, while five reported 40% or less of the normal supply. The car shortage

was most acute in the eastern fields of West Virginia and the central fields of Pennsylvania.

Contrary to usual expectations there was no drop in the production for the week ending July 10, as the total for the week was 9,803,000 tons, as compared with 7,459,000 tons for the same week in 1919. The average daily production for the week was 1,961,000 net tons.

That production is actually on the increase is shown by a preliminary report for the week ending July 17, which shows that for the first three days of that week the production was at a rate of 5 to 6% greater than during the preceding week.

With production showing an increase owing to a better supply of cars at the mines the situation was also made somewhat easier for public utility companies by the issuance of an order by the Interstate Commerce Commission, which not only extended the order requiring all open-top cars to be used for the transportation of coal until Aug. 19, but also so amended the order to give public utilities and other public institutions a priority right to these coal cars after they are loaded for shipment.

The amended order, however, is not clear as to whether the priority right goes to the extent of allowing utilities to pile up coal in their storage yards for winter use, or applies only to rushing coal to utilities that are in need of it for immediate use.

Public utilities in New York City are working on a small reserve of coal and shutdowns are threatened unless fuel is received in sufficient quantity to insure continuous operation. The supply of the New York Edison Co. is very low, as is also that of the Brooklyn Rapid Transit Co.

S. E. D. COMMITTEE DISCUSSES IMPORTANT QUESTIONS.

Co-operative Plan, Advertising and Lighting Exhibit Considered by Executive Committee of the Society.

At a meeting of the executive committee of the Society for Electrical Development held in the New York City headquarters, 522 Fifth avenue, July 16, a number of important questions were discussed, including a plan for co-operation between the society and the California Electrical Co-operative Campaign. It was also agreed that the society take up with the Harvard School of Business Research the question of the society's research bureau co-operating with the school in collecting data relative to the cost of retailing electrical appliances.

James M. Wakeman, general manager of the society, was instructed to take up with national advertisers the importance of carefully scrutinizing advertising copy in which suggestions are made showing appliances attached to lamp sockets which are not suitable for such use. Harm is also done by showing impossible combinations of appliances upon one socket. Such advertising, the society believes, leads to a misuse which works injury to the industry.

It was decided by the committee to encourage the use of advertising, such as now being put out by several companies, setting forth the necessity of public utility companies securing adequate financial aid.

Samuel E. Doane, Cleveland, attended the meeting and presented to the committee for consideration a plan for demonstrating the industrial illumination exhibit shown at the recent National Electric Light Association convention. General Manager Wakeman was instructed to confer with M. H. Aylesworth, executive manager of the N. E. L. A., to decide what can be done to further the plan, which is not only of interest to the electrical industry as a means of developing business but is also of the greatest importance to manufacturers of every description and to the public at large, because it is a movement for increasing production and improving working conditions.

The following members of the committee attended the meeting: W. W. Freeman, president of the society; Charles L. Edgar, chairman of the committee; Joseph E. Montague, representing the central-station companies; L. P. Sayer, representing the manufacturers; E. W. Rockafellow, representing the jobbers; James R. Strong, representing the contractor-dealers; James M. Wakeman, general manager, and James Smieton, Jr., secretary-treasurer of the society. The next meeting of the committee will be held in September.

SALES MANAGERS HOLD CONFERENCE AT ASSOCIATION ISLAND.

Commercial Men of Central-Station Companies Discuss Problems Confronting the Industry at Annual Convention.

The Sales Managers' Association, composed of representatives of 14 of the large central-station companies in the country, held its annual convention at Association Island, Henderson Harbor, N. Y., July 12-14, at which time many papers of distinct interest to the electrical industry were presented and given careful consideration and discussion.

The keynote of the convention, recurring constantly, though the papers and discussions were on widely differing subjects, was the co-operative spirit which is being shown by customers and prospective customers in helping the central-station companies to meet the unusual demands for service in these times when station and distribution capacities are exhausted and immediate developments "oversubscribed." This attitude on the part of the customer was referred to frequently. In numerous cities customers have voluntarily asked how they could help the central-station companies meet problems such as rearrangement of peak hours, readjusting hours of employment and in helping raise needed funds for the companies. In citing this situation it was pointed out that while central-station companies have been working for many years to educate the public to see things from the central-station viewpoint the work at times had been discouraging. Now the central-station companies are finding that the public really does appreciate service and not only wants the service continued but wants the companies to prosper.

T. I. Jones, general sales manager of the

Brooklyn Edison Co. and chairman of the executive committee, called the convention to order July 12, and following the transaction of the routine business of the association, the presentation and discussion of papers was taken up. On the first day the following papers were presented: "Some Economic Problems of Interest to the Sales Manager," by R. S. Hale, superintendent of the research department of the Edison Electric Illuminating Co. of Boston; "Discussions on Central-Station Financing With Relation to the Present Value of the Service Rendered to the Public," by Charles J. Russell, general commercial manager of the Philadelphia Electric Co.; "The Present Practice and Policy in Connection with Line Extensions," by Douglas Burnett, commercial manager of the Consolidated Gas, Electric Light & Power Co. of Baltimore, and "Telephone Order System," by E. W. Lloyd, general contract agent of the Commonwealth Edison Co., Chicago.

The second day of the convention was devoted to the following papers: "Co-ordination of Central-Station Service with Private-Plant Operation," by L. R. Wallis, superintendent of the sales department of the Edison Electric Illuminating Co. of Boston; "Isolated Plant Costs," by John W. Meyer, assistant general commercial manager of the Philadelphia Electric Co.; "The Merchandising of Incandescent Lamps," by Clarence L. Law, manager of the bureau of illuminating engineering of the New York Edison Co., and "Special Sales and Window Displays," by E. A. Edkins, general manager of the electric shops of the Commonwealth Edison Co., Chicago. The sessions of the convention were closed with a paper on "The Supply of Electrical Energy to Large Customers," by R. H. Tillman, manager of the new-business department of the Consolidated Gas, Electric Light and Power Co. of Baltimore.

The convention being the tenth annual one held by the association, L. D. Gibbs, of the Edison Electric Illuminating Co. of Boston, suggested that R. S. Hale, who was the originator of the association, prepare a paper telling of its activities, the work it has accomplished, the benefits derived and something of the future outlook for the association, and give the paper to the technical press for publication.

The association elected as its executive committee for the ensuing year, R. H. Tillman, E. A. Edkins and R. R. Young.

The companies comprising the association were represented at the convention by the following men:

Consolidated aGs, Electric Light & Power Co., of Baltimore—R. H. Tillman and Dorsey R. Smith.

Edison Electric Illuminating Co. of Boston—L. R. Wallis, R. S. Hale, L. D. Gibbs and C. E. Greenwood.

Brooklyn Edison Co.—T. I. Jones and G. J. Leibman.

Commonwealth Edison Co., Chicago—E. W. Lloyd, E. A. Edkins and Fred R. Jenkins.

Detroit Edison Co.—John D. Noyes, Ray F. Duncan and Charles H. Bay.

Public Service Co. of New Jersey—H. H. Holding and R. R. Young.

New York Edison Co.—A. A. Pope, John F. Kelly, C. K. Nichols, H. T. Luscomb, W. R. Boyd, C. L. Law, F. C. Henderschott and A. Hertz.

United Electric Light & Power Co., New York City—J. F. Becker, Drake V. Smith and Ralph Neumiller.

New York & Queens Electric Light & Power Co., Long Island City, N. Y.—Charles A. Barton and L. J. Montgomery.

Philadelphia Electric Co.—Joseph D. Israel, Charles J. Russell, John W. Meyer and Thomas Berger.

Potomac Electric Power Co., Washington, D. C.—G. P. Mangan.

TO CIRCLE GLOBE WITH WIRELESS SYSTEM.

There is being discussed in France a scheme for embracing the whole globe with stations erected wholly on French territory. To overcome difficulties due to atmospheric conditions, experts believe that it will be necessary to use generators of at least 1500-kw. capacity and to employ antennae at least 1500 ft. in height. The network of stations proposed would comprise the stations at Tahiti, New Caledonia, Indo-China, Djibouti, and France. The center of the network is in France, and comprises three stations able to communicate respectively with (1) the United States, (2) Martinique and Brazil, and (3) West Africa.

APPROVAL GIVEN ELECTRIFICATION OF SWEDISH RAILWAYS.

The Swedish Parliament has definitely approved of the electrification of the state railways between Stockholm and Goteborg and has appropriated for the work 23,000,000 crowns (normally $6,164,000). It is expected that the conversion from steam to electrical operation will be completed by 1925.

MINOT, N. D., DEFEATS MUNICIPAL OWNERSHIP PLAN.

At a special election held in the city of Minot, N. D., July 13, to determine whether or not the city should own and operate its electric light, steam heat and telephone facilities, the vote stood 560 in favor of municipal ownership and 877 against the proposition.

COMING CONVENTIONS.

Michigan Section of the National Electric Light Association. Annual convention, Ottawa Beach, Mich., Aug. 24-26. Headquarters, Hotel Ottawa. Secretary, Herbert Silvester, Ann Arbor, Mich.

Nebraska Section of the National Electric Light Association. Annual convention, Omaha, Neb., Sept. 8-9. Secretary, B. H. Conlee, Nebraska Gas & Electric Co., Beatrice, Neb.

Pennsylvania Electric Association. Annual convention, Bedford Springs, Pa., Sept. 8-11. Secretary, H. M. Stine, 211 Locust street, Harrisburg, Pa.

New England Section of the National Electric Light Association. Annual convention, Kineo, Me., Sept. 13-16. Secretary, O. A. Bursiel, 149 Tremont street, Boston, Mass.

Illuminating Engineering Society. Annual convention, Cleveland, Sept. 27-30. General Secretary, Clarence L. Law, 29 West 39th street, New York City.

National Association of Electrical Contractors and Dealers. Annual convention, Baltimore, Md., Oct. 4-8. Headquarters, Southern Hotel. Secretary, W. H. Morton, 110 West 40th street, New York City.

International Association of Municipal Electricians. Annual convention, New Orleans, La., Oct. 19-22. Secretary, Clarence R. George, Houston, Tex.

COMMERCIAL PRACTICE

New-Business Methods, Policies, Rates and Kindred Central-Station Matters for the Man Engaged in Selling Electricity

METER SELDOM WATCHED BY USER OF ELECTRIC RANGE.

Experience Shows That Though Often Installed, Customer Finds Advantages Outweigh Any Possible Extra Expense.

When electric energy-consuming appliances such as ranges and water heaters are installed, almost invariably the customer asks that a meter be installed at the expense of the utility, that he may determine and watch the energy consumption from time to time. There is a widespread opinion that the cost of operation is high and prospective users often unconsciously fear this proverbial high cost.

Often the meters are installed, and the central station thinks it will be able to obtain some really valuable data as to load-factor, demand, peak and energy consumption for various operations. In almost every case these hopes are empty. Inquiry soon brings out the fact that the metering equipment is not being utilized. The customer tells that he finds he does not need the meter. He never worries about the energy consumption. Electric cooking is expensive, yes, but it does not matter because all the other advantages mask the cost. In other words, the user is an enthusiast. He chooses to ignore the cost because the advantages and benefits of electric cooking are so apparent and real. He chooses to ignore what is considered by many the chief objection to the use of electric ranges—the comparatively high cost of operation.

Could anyone ask more than this? Could there be a better advertisement than this? Could there be a more decisive answer to those who bewail the high cost of energy when it comes to linking up electric heating devices? Based upon facts, there is only one reply, and that is that cleanliness, convenience, economy of time and edibles, absence of odors, more comfortable working conditions, and so forth, make the item of energy cost, and even cost initially of the range, small and insignificant.

INDIANA CENTRAL-STATION PLANTS HAVE BIG PROBLEM.

Must Raise $88,000,000 in New Capital Within Next Few Years to Meet Demand for Service, Says Utility Commissioner.

To meet demands for service at least $88,000,000 of new capital must be raised and expended by Indiana utilities in the next few years, according to Paul P. Haynes, a member of the Indiana Public Service Commission. He says that the after-the-war problem in Indiana measures with that of Illinois and that public interest demands that investors be encouraged to part with their savings so that the expenditures may be made.

"I contend that the first and most important step in solution of this problem is that the utilities of the country must teach the public to know that it is a partner in this vast enterprise," Commissioner Haynes said. "The public is a partner which inevitably must suffer the losses and enjoy the prosperity of companies that dedicate themselves to the public service."

UNITED ELECTRIC LIGHT & POWER ADVERTISES APPLIANCES.

The United Electric Light & Power Co., New York City, is running a series of 20 advertisements in the New York City daily newspapers during July and August under the caption, "Summer Comforts for You—at Home," in which electrical appliances that tend to relieve the conditions during the warm months are featured. Although the company sells all of the appliances advertised the company has not devi-

Summer Comforts
for you—at home
even though your weekly wash is heavy. Use an Electric Washing Machine—it saves labor, time and money. Delicate lingerie or coarse sheets—it doesn't matter which—they'll be cleaner and more carefully washed, irrespective of the number. Save your energy—it pays.
Electric Washing Machines from $150.00 up
Sold by local Electrical Dealers and by our three Branch Offices
The United Electric Shops
OF THE UNITED ELECTRIC LIGHT & POWER CO.
130 EAST 15TH ST.
89TH STREET & B'WAY
146TH STREET & B'WAY
Summer Comforts
for you—at home
from breakfast time on. An Electric Grill will prepare your toast, cereal, eggs, bacon, chops or even small steaks—in the better way. Three graduated depths of cooking pans allow perfect utilization of the heating element at one time, right at the breakfast table.
Electric Grills from $12.50 up
Sold by local Electrical Dealers and by our three Branch Offices
The United Electric Shops
OF THE UNITED ELECTRIC LIGHT & POWER CO.
130 EAST 15TH ST.
89TH STREET & B'WAY
146TH STREET & B'WAY

Facsimile of Two Advertisements Used by United Electric Light & Power Co., New York City, in Appliance Selling Campaign.

ated from its policy adopted some time ago of including reference to local electrical dealers from whom the public may purchase the merchandise featured in the advertisements.

METHODS OF INCREASING ELECTRIC SERVICE IN HOMES.

Some points of interest to contractor-dealers were contained in the subject, "New Ways of Increasing the Use of Electric Service in the Home," presented at the recent convention of the Ohio Electric Light Association by K. Fitzpatrick, Jr., lighting sales agent, Dayton Power & Light Co.

"Why is it that there are more victrolas in the home today than washing machines? Is there a greater need for victrolas than washing machines? Surely not," said Mr. Fitzpatrick. "We have used the wrong selling methods. We have overlooked the fact that we are selling to the woman, and she is not interested in the particular kind of product (electrical energy) or how it is made. She is interested in the way it will do the work and the pleasures she will have after completing her work.

"In the end it is the application of electric service in the home that will bring us increased revenue, that will tie us more closely to our customers and make them more appreciative of electric service. Have we failed to educate our employes and the electrical contractor to the point where they realize that electric service in the home does more and costs less than any other commodity?"

The discussions cited the neglect of customers after the sale of appliances, and pointed out that repair service would go a long way toward popularizing electric service in the home. It was also agreed that further training in salesmanship was necessary for solicitors and salesmen of central-station companies.

ATLANTIC COAST ELECTRIC GIVEN RATE INCREASE.

The New Jersey Board of Public Utility Commissioners has granted the Atlantic Coast Electric Co., operating in Asbury Park, N. J., permission to increase its base rate for domestic service from 10 to 12 cents per kw-hr. The new charge, effective with July service, will be applicable to the first 100 kw-hrs. used per month, and is graded to a minimum of 8.5 cents for consumption of over 2000 kw-hrs. per month, in place of the former 6.5-cent rate.

COMMONWEALTH EDISON CO. ADDS TO ELECTRIC SHOP.

The Commonwealth Edison Co., Chicago, has added 10,000 sq. ft. of floor space to its electric shop, already the largest central-station salesroom in the world, and now has entrances on three streets—Adams, South Clark and South Dearborn. The new addition is in the Marquette building on South Dearborn street and fronts approximately 100 ft. on that street, extending back a like distance, where it opens into the older portion of the salesroom in the Commonwealth Edison building. The new addition is decorated to conform with the remainder of the salesroom and will be used for a general showing of all appliances at the present time. It gives the electric shop 100 ft. of additional display windows.

PENNSYLVANIA COMMISSION RULES IN COMPETITION CASE.

Decides Company Has No Right to Discontinue Service to Customer Who Operates Small Lighting System of His Own.

The Pennsylvania Public Service Commission in a recent decision ordered the Bucks County Electric Co. to restore service it had discontinued to Alexander J. Strathie and also ordered the company to eliminate a rule providing that customers under contract could use only electric power furnished by the company on their premises.

In this case the electric light company sought the enforcement of its rule which provides that: "The customer will not use on the premises any electricity, except that furnished by the company, without the written consent of the company." From the testimony given it appeared that the complainant (Strathie) was a user of electricity furnished by the company at his drug store and residence, the current being used for lighting and for driving a small motor connected with his soda water fountain. The landlord of Strathie installed a small lighting system, and Strathie secured a portion of his supply from this source, making use of the company's service whenever that of the landlord proved inadequate or insufficient. Upon being informed of this the company discontinued service and refused to continue it on the ground that Strathie was violating its rule.

The company claimed this rule to be just and reasonable, and necessary in order to prevent a practice by which the customer could avail himself of the company's facilities for securing service which it is expensive to maintain, while he uses a competitor's facilities for the balance of his requirements, which can be met at a low cost, because they demand a comparatively small investment. The company protested that it should not be called upon to furnish stand-ready service to be used to supplement its competitor's inadequate service, and that the company rule was designed to eliminate an unfair competitive condition and bring to the company the profitable, as well as the unprofitable, portion of the customer's business.

In making its ruling the commission said: "We are unable to agree with the contentions of the company in this case, insofar as it would accomplish its purpose by the enforcement of the rule quoted; we are of the opinion that a rule that requires a customer not to use any electricity except that furnished by the utility is unjust and unreasonable. The utility may adopt rates which will secure it an adequate and reasonable return for the service which a particular class of customers demands, but it cannot refuse service simply because the purchaser does not purchase all of his electricity from it."

The commission ordered the company to resume service to the customer.

CONTRACTOR-DEALER

An Exchange of Ideas and Experiences on Advertising and Selling Methods, and Store-keeping for the Dealer in Electrical Goods

DEALER FINDS EXCHANGE OF IDEAS AND METHODS PROFITABLE.

Credit Is Given by Contractor-Dealer in Ohio to Association Service and Co-operation for His Success in Business.

That co-operation through the interchange of ideas and methods is beneficial to the electrical contractor-dealer is the conviction of Frank C. Poling, proprietor of the Service Electric Co., Mansfield, O.

"We have always made it a point to insure a profit on each job," says Mr. Poling, who freely gives to other contractor-dealers any information regarding the conduct of his own business that may prove as valuable to them as it has to him. "It is still the practice of an occasional contractor, in his anxiety to secure a large job, to forget profit and figure on the old method of additional work for which he can make up any discrepancies in his original figures. We have never accepted this view, but have always figured on work as outlined on the blue prints and specifications. If additional work developed it could be handled on a basis fair to both parties.

This dealer pays voluntary tribute to the efforts of the Society for Electrical Development, through membership in which he says he has benefited by utilizing information and advertising copy prepared by the society. He reports excellent results from the use of daily advertisements in the local newspapers.

Mr. Poling uses a card index system to keep his mailing list of prospective customers up to date. He employs circular letters with fair success; also printed circulars, but he has never checked up the results of the latter.

No special sales are conducted at the store of the Service Electric Co. The dealer follows the suggested schedule of the Society for Electrical Development in the matter of seasonable sales. In the matter of lighting fixtures he says he keeps well stocked and gives considerable attention to sales because his profit in fixtures is sure. Repairs of appliances, no matter how small, are handled with promptness.

"We maintain prices and we extend credit to customers because we find we can in a great many instances sell a considerably larger bill of goods by granting time payments," says Mr. Poling.

Dressing a Show Window for Electric Washer Demonstration

In this display a young woman is demonstrating the simplicity of the working parts of an electric washer and the various positions in which the wringer may be used. The utilitarian features of electric washing machines are forcibly emphasized by window displays of this character.

Economic Practices in Merchandising and Contracting Demand Standardized Attachments

Much Waste Results in Differing Types of Attaching Devices While Certain Other Practices Are Duplicated at a Loss to Manufacturers

By GEORGE J. KIRKGASSER

"What do we do with these two extra screws?" inquired the electrician's helper of the journeyman electrician.

"Throw 'em away," was the reply.

This same reply has been given to thousands of helpers upon discovery that, for every flush switch or flush receptacle, two screws are furnished by the switch or receptacle maker and two by the outlet-box manufacturer for securing the switch or receptacle in place. Only two are needed. Approximately 20,000,000 of these screws have been wasted each year.

One of the organizations of electrical manufacturers suggested the discontinuance of this practice several years ago, but there apparently has been no result. Perhaps the manufacturers of outlet boxes may be trying to have the switch and receptacle manufacturers furnish the screws, or vice versa. Neither seems to be confident that the other will, so both still furnish them.

It is needless to say that this waste is absolutely unnecessary and should be easy to terminate. The outlet-box manufacturers, it would seem, should furnish the screws, since they thread holes to receive them, although they may claim that the switches and receptacles should be furnished complete with screws for their mounting. At any rate, however, this economic waste should be eliminated. The organization which originally made the suggestion should be able to assist in this, since much work along these lines has been accomplished, stimulating the spirit of co-operation and fair play.

Standard Receptacles and Plugs Needed.

Another instance where co-operation for the benefit of the public seems necessary is that of attaching devices. Appliances, portable lamps and other electrical products used mainly in the homes have been provided with attachment plugs of all types and styles. Even on high-prices floor and table lamps, cheap, solid plugs without the swivel feature are still on the market, making it necessary to twist the cord to screw the plug into the socket or screw-shell receptacle to which it is attached.

Until a few years ago neither separable type plugs were standardized nor were receptacles. The user was put to all sorts of inconvenience in connecting appliances to his electric circuits. The floor lamp had a plug that probably could only find an accommodating receptacle in the kitchen, the electric iron could not be connected in the laundry, the toaster worked nicely near the piano in the living room, while dad's electric shaving mug could only be attached to the receptacle near the laundry tubs.

Even in the house supplied with a fair number of outlet receptacles, the fact that each of the appliances carried a different kind of attaching device made their convenient use impossible.

Five manufacturers did set out several years ago to standardize plugs and receptacles, so that a start has been made in this direction. Every installing contractor can co-operate in this movement by seeing that receptacles installed permit the use of appliances at all outlets, and by encouraging the replacement of receptacles already in use, as well as the equipping of devices in the home with separable caps of the standard type to be used with these receptacles. There is money in doing this work at once, and since the use of electrical appliances must depend upon properly wired and equipped houses there is assured a constantly increasing market.

This brings up the point of making further savings. If standard separable type receptacles and plugs are exclusively used, appliances in the future could be equipped by the manufacturer with only the cap of the plug and not the screw-shell body portion. In one home a recent check showed that there were six attachment-plug bodies which had been removed from the appliances, since all the receptacles in the house were standard, and all appliances came equipped with the standard plug or were changed so that they did conform. A saving of about 10,000,000 separable-plug bodies could easily be made each year if a concerted effort was made.

Elimination of Other Wastes.

Eliminating waste is always a good thing. Encouraging standardization means an economic saving, and, since it gives the user greater convenience and flexibility, means the eventual increase in sales of electrical goods, resulting in increasingly bigger business for the electrical contractor.

Other cases of waste are often the result of careless legislation, something contractor-dealers through their organizations should work to prevent. In one part of the country there was a rule which required a separate meter for every motor no matter if only of fractional horsepower, while for a kitchen range with much greater capacity no extra meter was required. This would seem to be a good thing for manufacturers of meters, but in the long run anything of this kind running counter to common sense and economic laws cannot be for the good of all concerned in the industry.

No motors under 5 hp. were permitted in another locality. This resulted in larger sales when they were made, but held down the number of installations. From an engineering and power company standpoint the use of a motor larger than required is poor practice.

Further economic gains could also be made if lamps, electric flatirons, toasters, percolators, etc., could be made for fewer voltage ranges. Around 110 volts the manufacturer provides apparatus for 100-107, 108-115, 116-125 volts;

around 220 volts, he provides for 210-225, 226-235, 236-250 volts. And the distributor must carry a larger assortment and invest more money, on which interest must be paid. With lighting companies all over the country standardizing to a greater extent on the voltages of their systems, a big waste would be eliminated in connection with appliances used on these systems as well as in other ways.

This standardization and elimination of waste is one answer to the production problems. The cost of producing would be decreased and the amount of material carried would be decreased. A distributor, instead of carrying say 1000 articles covering various voltage ranges, could reduce that to 500 if fewer ranges would suffice. His turnover would be better and his investment smaller.

An order received by a manufacturer without the voltage ranges specified requires the writing of a letter to inquire concerning this, and a reply, all of which takes time and money. He may then find a good supply on hand and in production, but upon investigation learn that nothing of the voltage range desired is to be had.

The average householder does not know the voltage of the current supply at his house, although the contractor can ascertain this by calling on the lighting company. This is a loss of time and could be avoided if there was standardization of voltage ranges.

Electrical Dealers Ready to Make This Year the Largest Harvest Time for Washing Machine Sales

Unusually Attractive Window Displays and Demonstrations Have Been Designed to Appeal to Prospective Customers During Sultry Weather

By ERNEST C. DENCH

More electric washing machine window displays are arranged during the summer months than during the other months of the year. The reason for this sudden outburst of activity is that summer is the season of the year when the housewife is in a more respondent mood to lightening her household duties. No self-respecting housewife who has the necessary means and facilities will be found perspiring over a washboard after she has been convinced that the electrical way is by far the best.

G. L. Lanneau, Charleston, S. C., was responsible for a highly ingenious window display. In the middle of the display was a very elaborate baby basket inside which a lifelike baby doll was seated. An accompanying card contained the message: "The Newest Washing Way. Do It by Electricity." Surrounding the basket were several types of electric washing machines with a rose attached to each.

Hanging in the trim was an amusing cartoon captioned: "Washday in the Ark." The cartoon showed a busy day among the animals. The elephant was attending an electric washer with his trunk, while his mate was swinging a baby elephant in a baby jumper. A donkey was at the antiquated washtub, scrubbing vigorously. Also in the cartoon was a polar bear ironing with an electric flatiron at a patent folding ironing board. In the background were two monkeys, each provided with a basket of patent clothes pins, hanging out the wash on a line. The back of the trim was hung with roller shades and the floor was covered with grass rugs. The effectiveness of the display would have been greatly increased had cardboard cut-outs of the animals and washing machines been placed in the window instead of employing the cartoon.

At a store recently opened in Washington, D. C., by the local agent for a washing machine manufacturer, an electric washer was revealed in the middle of the window. At the right was a wax automaton of a worn-out woman scrubbing clothes on a washboard, animated by electricity. At the left was a wax figure of a woman sitting by the side of the electric washer. She held a book in her hand, was rocking in a chair and laughing as though she had no cares in the wide, wide world. The contrast was obvious and the sales results excellent.

Effective Contrast in Window Display.

The Public Service Electric Co., Newark, N. J., arranged an electrical washer in its window, with chains of baby blue ribbon extending from the different parts of the washer to down in front, where there were cards calling attention to the machine parts so emphasized, as follows:

"Just press the button to start or stop the washing machine."
"All moving parts are inclosed."
"No special wiring; will connect to any lamp socket."
"Wooden cylinder; will never injure the finest linen."
"Rust proof metal and wood tank; make for solid and strong construction."
"Reversible wringer with safety release; can be operated while clothes are being washed."

The Lion Electric Co., Brooklyn, N. Y., backed up its washer display with this appeal to the man of the house: "If your husband had to do the washing he would get an electric washer."

Gill & Peplow, Decatur, Ill., struck a very human note with the window card that appeared in connection with a washer exhibit. The card stated that: "A little woman can do a big washing on this machine without effort. Electricity does the work."

Olds, Wortman & Kings, Portland, Ore., showed at one side in a window display the figure of a woman standing at an electric mangle. At the opposite side was another female figure standing before an electric washing machine. Both of the figures were daintily gowned in gingham and shown in attractive poses. In the

middle of the trim was another figure leaning over a wooden washtub. The woman's hair was very much disarranged while her face was marked with lines and hollows. The woman had on an old apron over her untidy garments, while the tub she operated was filled with water and dirty clothing.

The Sacramento Appliance Co., Sacramento, Cal., divided its window into two sections by means of a white fence about 2.5 ft. high. On one side appeared the figure of a woman bending over a steaming washtub, scrubbing away for dear life. The floor under her was dirty, with old broom straws littering the floor, and a smoky oil lamp burning on the table, on which was also a sooty-looking flatiron. The woman looked most unhappy.

On the other side of the fence was a woman resting in an easy chair with an electric fan cooling her, and the electric washer doing the washing for her. The room was equipped with electric lights, while the vacuum cleaner served to explain the clean floor. In the model room were several other convenient electrical household appliances.

An Artistic Washer Setting.

The Ernst Hardware Co., Seattle, Wash., trimmed an artistic window of the kind that is generally arranged to sell high-class suites of furniture. The decoration was executed in a warm grey. The entrance to the model room was approached under an artistic archway, achieved by graceful folds of the two valances of natural monks' cloth, with cream scrim curtains drawn to the pilasters at either side by Chinese tassels of the same shades. Sewn onto the scrim curtains were blue birds, fashioned out of blue felt, while suspended from a bracket attached to each pilaster was a grey Chinese bird cage, from which was suspended a Chinese tassel and bow of tulle. In the model laundry were two electric washers and an electric ironing machine.

Wanamakers, in New York City, recently ran an announcement in the local daily newspapers that was an editorial, magazine article and an advertisement all in one. Choice extracts from the announcement in question are reproduced below:

ELECTRICITY LESSENS WORK AND INCREASES RESULTS IN THE HOUSE.

Home is a place in which to relax, to play, to enjoy the companionship of family life unspoiled by the mechanics and jars of living. Ideal, of course, but we all try to attain it in some degree. Nowadays the chief topic of conversation among home makers is the service problem. Great expense, waste, constant change, worry, inefficiency—all go to make home a chaotic bugbear to many families. Away with the many hands and feet which in manorial days made life easy and smooth for master and mistress.

ELECTRICITY

will take the place of much human labor and it restfully omits the human equation which so invariably complicates living. Turn on the switch, day or night, and have your wish fulfilled with no unhappy altercations to make your wish a curse.

THE WASHING MACHINE

can be used in the bathroom of a small studio; in the laundry of a small house or apartment; in the laundry of an elaborate establishment. Melt the soap, run in the hot water, put in the clothes, pour on the soap, turn on the current, close the cover, and leave the machine to do the work! In about twenty minutes, repeat the operations. In 2 hours' time the week's washing is a thing of the past.

NO RUBBING—It is estimated that 90% of the clothes are rubbed out, not worn out.

Daintiest fabrics, as well as sturdiest, can be safely used in the machine.

NO CONFUSION—No laundry steams or odors, no noise; and the machine can be rolled through a doorway and put out of the way or used as an extra table in the kitchen for the rest of the week.

COST OF OPERATION—A week's washing can be done at an electric power cost of from 3 to 5 cents a week for a family of six.

KANSAS CITY ELECTRICAL INDUSTRY IN CAMPAIGN.

Interest in Electrical Appliances Is Stimulated by Co-operative Advertising in Sunday Newspapers Throughout the Year.

Contractor-dealers of Kansas City, Mo., are profiting through the co-operation of electrical interests in an advertising campaign in local Sunday newspapers for the purpose of stimulating the sale of appliances at electrical stores and to educate the people of that city to the fact that the electrical business now occupies as high a

Electric Ranges Have Proved Their Worth
24,000 Electric Ranges were installed in American homes last year. Far more families will give up less efficient cooking methods for the Electric Range this year.
Perfect cooking requires a heat that is under perfect control. The heat must be without odor, without smoke—absolutely clean. Only the Electric Range meets those requirements.
Tests prove there is less food shrinkage—less waste on the Electric Range. With the high cost of food this is most important. The Electric Range retains all the nourishment you buy.
Electric cookery can be applied to any sized family. That includes your family.
Stop in at one of Kansas City's progressive Electric concerns next time you are shopping and see what cooking on an Electric Range really means. It will be mighty interesting and instructive—and convincing.
DO IT ELECTRICALLY
ELECTRICAL GOODS
ELECTRICAL INTERESTS OF KANSAS CITY
No. 4—This is the fourth of a series of advertisements on Electrical Appliances and Electrical Service. Read them every Sunday.

Sample of Advertisement Used in Campaign by Electrical Interests of Kansas City, Mo.

plane as banking and other commercial interests.

Kansas City has three Sunday newspapers. In each one of these there appears every Sunday an advertisement occupying a prominent space three columns wide by 10 ins. deep, with copy and layout similar to the sample illustrated herewith. There is, of course, a change of copy each week. All the advertisements, however, are signed "Electrical Interests of Kansas City" and bear in the lower left-hand corner the slogan trade mark of the campaign captioned "Do It Electrically—The Symbol of Good Electrical Goods." This slogan is also featured on a large window card and displayed by all dealers who are members of the campaign.

QUESTIONS AND ANSWERS

All readers are invited to submit questions and answers to this department. Anonymous communications will not be considered. Questions should relate to electrical matters of any kind. Answers contributed by readers should be submitted preferably within eight days of the date of publication of the question and should be limited, if possible, to 300 words. Payment will be made for all answers published.

Questions.

No. 492.—Load-Factor on Distribution Transformers.—What is the customary ratio of maximum load to average load carried on distribution transformers serving purely residence neighborhoods when but few appliances are in use? What is the ratio when a considerable number of appliances are fairly well distributed among the customers? What is the ratio of total kw-hr. output of such transformers to their total kw-hr. capacity when working at their maximum demand? What transformer capacity should be installed per kilowatt of total connected load for purely lighting load and for a load involving the use of appliances as well as lighting?—R. H. C., Woodland, Ill.

No. 494.—Operating 60-Cycle Motor on 50 Cycles.—I have a 220-volt, 1200-r.p.m., 60-cycle induction motor which I want to install on a circuit operating at 220 volts and 50 cycles. The machine is in good order and is free from grounds, having been tested out with a pressure of 750 volts between winding and core. It operates without any unusual sound and without heating at no load, but I am not certain just what would take place if the machine was put under load, which will be about 7.5 hp. for a period of 10 hrs. per day. Should the motor be rewound or will it operate safely at 7.5 hp.?—H. F. W., Logansport, Ind.

No. 497.—Use of Reactors on Transmission Lines.—What are the factors which govern the size of a reactor that should be installed on a transmission cable to give protection from grounds? Do reactors that are suitable for protection against short-circuits give the same degree of protection against grounds? Are reactors essential or useful on well constructed overhead lines? Can overload relays be safely eliminated on lines that are properly protected by reactors?—A. B. R., Peoria, Ill.

No. 498.—Motor-Operated Centrifugal Pump.—I have recently re-installed a motor-driven centrifugal pump and have had a considerable amount of trouble in trying to make it operate. This pump is driven by a three-phase 5-hp. induction motor having a synchronous speed of 1200 r.p.m. The pump, as originally installed, delivered water from a tank at about the same elevation as the pump suction to another tank located 25 ft. above. As now installed, the pump has to raise the water only about 7.5 ft., but continually blows the fuses and heats up badly. The motor is not grounded or short-circuited and the pump seems to be in good order. I have increased the suction and discharge lines from 2-in. to 3-in. pipe without relieving the trouble. What can be the cause of the difficulty?—B. R. D., Atlanta, Ga.

No. 499.—Illumination in a Barber Shop.—What intensity of illumination should be provided for the working positions in a barber shop? What is the best method of securing the proper illumination in a manner that will not cause discomfort to the person in the chair or to the barber?—N. O. C., Detroit, Mich.

Answers.

No. 493.—Influence of Paint or Whitewash on Wattage Required to Light Large Spaces.—What effect, if any, does the application of good white paint or whitewash have on the wattage per foot-candle required to light a workroom 60 by 160 ft., with a 12-ft. ceiling? The side walls are of rough brick and the ceiling is of wood and is divided into 5 by 15-ft. panels by the beam and girder structure supporting the floor above. It is intended to light the room by means of type C lamps used in connection with steel enameled reflectors.—A. C. R., Kentland, Ind.

Answer.—The rough construction of the building under consideration would present a very poor surface for the reflection of the light from the side walls and for any light which might reach the ceiling. Accordingly, the utilization constant of such an installation would be rather low. The same amount of light may be produced on a working plane, by the use of approximately 10% less wattage, if the walls and ceiling were painted with a white paint of high reflecting value. For example, in a room of this size using RLM standard dome reflectors and bowl-enameled type C lamps, it would be necessary to employ approximately 1.15 watts per sq. ft. of floor area to produce 8 foot-candles under the dark surroundings, while it would require only approximately 1.05 watts per sq. ft. of floor area to produce the same intensity if the walls and ceilings of the room were painted white.

It is advisable, in painting a plant of this character, to employ two or three under coats of white paint in order to fill up the irregularities and present a more even surface for the final coat. This, in turn, should be of a flat-white finish, rather than a gloss finish in order to prevent any glaring conditions from a direct diffusion of the light source.

The economics of the question also demand that a paint should be selected which will not depreciate with age, as well as having a high initial reflecting value. Many paints, especially those of the calcimine type, have a very rapid depreciation due to their porous condition which, in time, collects dirt and dust very readily. White lead and oil, on the other hand, also deprecitae, due to the yellowing of the paint after being subjected to daylight, thus cutting down the reflecting value of the painted surface.

Probably the best paint obtainable for this purpose is a flat-white enamel (magnesium bearing). This not only presents a highly efficient reflecting surface at the beginning, but it also has a very small depreciation after ageing and, consequently, there is no necessity for repainting as often as when a less efficient paint is employed.

It has been found that it is possible for the illuminating efficiency of a room, painted with a poor reflecting surface, to depreciate from 15 to 20% due alone to the decrease of the reflection coefficient of the painted surface. In other words, after a two-year period, it would be necessary to supply that percentage more wattage in order to obtain the same amount of light as when the paint was first applied.—A. S. T., Harrison, N. J.

Answer.—The use of steel enameled reflectors of the bowl type will effectually prevent any direct rays of light from the lamps reaching the ceiling. The color of the ceiling will therefore have but little effect upon the illumination of the workroom. Owing to the small amount of effective wall surface below the line of the reflectors, compared to the size of the room, the finish of the walls will have but a slight bearing on the wattage required for proper illumination.—H. S. R., Wahpeton, N. D.

BOOK REVIEWS

"Artificial Light." by M. Luckiesh. New York: The Century Co. Cloth, 366 pp. (5 ins. by 8 ins.), with illustrations. Supplied by Electrical Review Publishing Co., Inc.

The author has treated the subject of artificial light in an historical fashion for the benefit of the average reader. No attempt has been made to discuss the physical or mathematical laws that apply to the propagation and utilization of light, but, rather, the author has taken up the task of telling what light has done and what it is now doing for mankind.

Light and progress, primitive light sources, the ceremonial use of light, and other similar subjects are treated in the first chapters. Interesting pictures of early lamps and fire-containers serve to illustrate this portion of the text. A chapter dealing with the science of light production serves to introduce the general subject of modern illumination, which is taken up and discussed from many angles. Under the subject of modern gas lighting, the various kinds of illuminating gas are described, together with a brief outline of their method of production. Separate chapters are devoted to the arc and the incandescent-filament electric lamps and another chapter treats of the light of the future. Street lighting is treated historically and an entire chapter is devoted to the history and development of lighthouses. Artificial light in warfare, signalling, cost of light, light and health, light in the home and other subjects are covered in both an interesting and instructive manner.

"Armature Winding and Motor Repair." By Daniel H. Baymer. New York: McGraw-Hill Book Co., Inc., Cloth, 515 pp. (5½ ins. by 8 ins.) with 301 illustrations and many useful tables. Supplied by Electrical Review Publishing Co., Inc., for $3.

In this book no attempt is made to discuss the subject of armature winding from a theoretical or design standpoint. On the contrary, it is a compilation of methods that are used by repairmen and armature winders. Information as to practices and methods of doing work has been drawn from a variety of sources, much of the data being secured in shops where the actual methods described are in everyday use.

The illustrations cover every phase of the information given in the test and include photographs of coils, armature cores, winding work in progress on all styles and sizes of machines and in various stages of completion. Diagrams show, in great detail, the various types and styles of coils, windings, slots, insulations and connections. Numerous tabulations give detailed information as to what values should be allowed for various quantities, how coils should be connected and what sizes of materials should be used.

Special chapters are devoted to the discussion of d-c. windings, a-c. windings, repair-shop methods of rewinding d-c. motors, making commutator connections, testing d-c. windings, operations before and after winding d-c. armatures, insulating of and for d-c. and a-c. windings, repair-shop methods for rewinding a-c. machines, adapting d-c. motors to changed conditions, reconnecting induction motors, commutator repairs, brushes and brush trouble, inspection and repair of motors, generators and starters, motor and generator troubles, special troubles and tools and equipment. An appendix includes many tables of reference data.

"Electricity." By Reg. E. Neale. New York: Isaac Pitman & Sons. Cloth, 136 pp. (4.5 ins. by 7 ins.) with 45 illustrations. Supplied by Electrical Review Publishing Co., Inc., for $1.

A brief review of general nature of electricity, its generation and utilization is presented. Brief comment is made on the sources of electricity and the kinds of current that may be produced. Diagrammatic illustrations show the generation of single, two and three-phase voltage and the rectification of a single-phase wave. Methods of measuring and selling electric service are briefly described and diagrams show how the a-c. voltage and current waves combine to produce a power wave. Generating and distributing practice are described in relation to both large and small demands. Switches and switch mechanisms, control apparatus, substations, transformers, batteries and other devices are treated in a manner to make clear the general principles of their construction or use.

About one-half of the book is devoted to the various applications of electrical power to the use of man. Lighting, heating, cooking, motor applications, traction, electrochemical, furnace and signalling services are described and illustrated sufficiently to give an idea of the part taken by electrical energy in these fields.

"Spot and Arc Welding." By H. A. Horner. Philadelphia: J. B. Lippincott Co. Cloth, 296 pp. (5 ins. by 7.5 ins.), with numerous illustrations and tables. Supplied by Electrical Review Publishing Co., Inc.

The author undertakes in this book to present the available information on electric welding in order to establish the fact that welding is satisfactory for heavy construction work. Much information taken from the experience of the Emergency Fleet Corp. is presented to show the actual strength of joints made by various types of electric welds as compared with similar types of riveted joints.

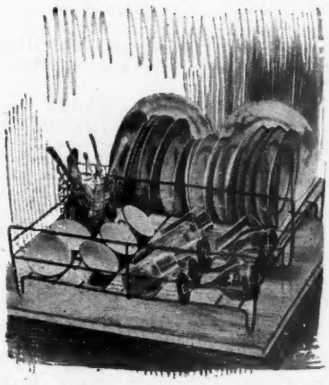
Materials to be welded are discussed in the first chaper, only such materials being treated as are useful in actual heavy construction work. Various systems of welding are described and an entire chapter is devoted to spot welding. In this chapter many details of the process are taken up and discussed. Illustrations show a number of heavy welding machines and their application to large work, and a mass of test data shows the actual strength of welds made under varying circumstances. Arc welding is illustrated in actual application to various services, particular attention being given to car couplings and other heavy railroad materials. Special consideration is given to the mechanical process of arc welding, and a set of illustrations show in detail the difference between good and bad work. Considerable space is given to the various theories of welding.

NEW APPLIANCES

Newly Developed and Improved Electrical and Mechanical Apparatus, Appliances, and Devices Now Being Placed on the Market

Self-Cleansing Dishwasher.

With the spread of the electrical idea the electric household dishwasher is taking its place along with the electric



Illustrating Capacity of "Star" Electric Dish Washer.

washer, wringer, vacuum cleaner, sewing machine and other household conveniences. The "Star" electric dishwasher, manufactured by the Fitzgerald Manufacturing Co., Torrington, Conn., is an all-metal machine, rectangular in shape and equipped with casters. The household size is 32 ins. long, 24 ins. wide and 35 ins. high. The all-copper top serves as a kitchen table when closed. The washer is thoroughly cleaned and sterilized along with the

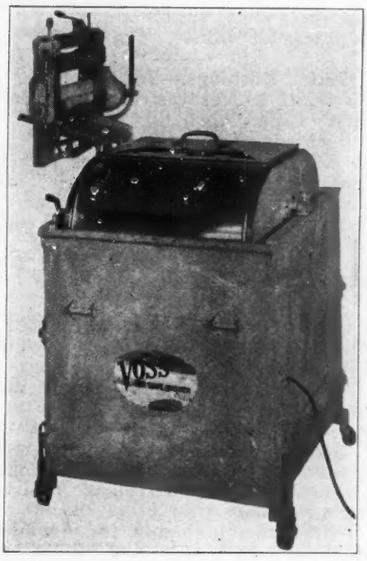
"Star" Electric Dish Washer, Household Size.

dishes in the process of washing and rinsing, making an additional cleaning unnecessary.

All-Metal Washing Machine.

Continued shortage and high cost of all classes of labor, including domestic help, is producing an increasing demand for labor-saving equipment. Domestic washing machines of a good quality are being purchased as fast as they can be manufactured, and in many instances even before they are available. In order to meet this demand, the Voss Brothers Manufacturing Co., Davenport, Ia., has produced the Voss "Sea Wave Washer." The name was chosen to represent the figure-eight motion of the water when in operation.

A perfectly smooth tub is used in this machine, and the characteristic motion of the water is produced by a curve on each side of the top of the tub. Heat insulation is provided for the body of the tub in order to prevent the rapid cooling of its contents, the manufacturer stating that water will remain hot enough for use for a period of 5 hrs. This heat insulation is secured by placing two thicknesses of fiber material between two layers of sheet metal in the construction of the washing body. Tinned copper is used for the inside



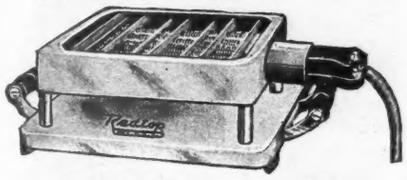
Voss "Sea Wave Washer" of All-Metal Construction.

lining, and tinned sheet metal is used for the outside.

Safety and reliability are two of the prominent characteristics aimed at in the design of this machine. Spring doors provide a flexible space at the ends of the cabinet which surrounds and incloses the entire mechanism. The framework is built up of 2-in. angle irons, and large rollers provide for the easy movement of the machine from place to place. A safety wringer of the swinging type comes to a convenient position for wringing material either into or out of the machine. A handle at the side serves to connect the wringer to the motor within the cabinet, and the usual mechanisms are provided to vary its position and reverse its direction of operation. A new factory for quantity production of this machine will be completed in August of this year, and shortly afterward a fairly large output will be available for the market.

1920 Model Appliances for Table and Kitchen Use.

Among the table and kitchen appliances placed on the market recently by the Redtop Electric Co., Inc., 8 West 19th street, New York City, are several electric combination stoves and a three-heat electric flatiron with heat-regulating plug. These appliances are manu-



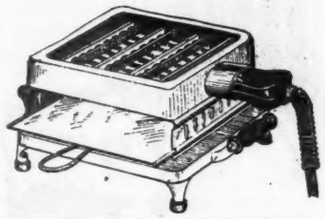
No. 108 "Redtop" Electric Stove.

factured under the Marsh patent license. The metal parts are all highly nickel-plated and polished, and each is equipped with 6 ft. of asbestos-covered cord and an attachment plug.

The heating area of the "Everhot" flatiron covers the entire bottom. The feature of this appliance is the heat-regulating plug which is graduated to give three heats, 125 watts, 275 watts or 550 watts, by placing the plug so that the number thereon representing the heat desired is over the corresponding number marked on the flatiron. The weight of the flatiron is 6.5 lbs., and it is equipped with stand or heel-plate.

The electric stoves, Nos. 104 and 108, here illustrated, are equipped with interchangeable heating units and with the "Fitzall" plug, which permits the use of different styles of heating devices on a table at the same meal without having to rise and change the cord at the socket.

The 1920 "Fitzall" plug eliminates loose nuts by having threaded bushings



No. 104 "Redtop" Electric Stove.

cast into one side of the plug-case to receive the machine screws holding the case together.

Storage Battery for Starting and Lighting Service.

The increasing service demanded from the electrical equipment of automobiles calls for a continued improvement in the quality of storage batteries required. Long life, reliability and economy of space and weight are some of the features required in a good battery for starting and lighting service. The battery now being manufactured by the Dixie Storage Battery Co., Baltimore, is intended to meet this demand.

LATEST APPROVED APPLIANCES

Approved by Underwriters' Laboratories, Following Examination and Tests Conducted Under the Standards of the National Electrical Code

Fixture Fittings.—S. & W. Electric Co., 274 Grand River avenue, Detroit, Mich. Listed April 9, 1920.

"S. & W." fixture hanger, consisting of metal framework inserted in hole in end of piece of threaded pipe used as fixture stem; designed for use in old work as fixture and outlet-box support.

Fixture Fittings.—Universal Manufacturing Co., 2633 Randolph street, Lincoln, Neb. Listed March 29. 1920.

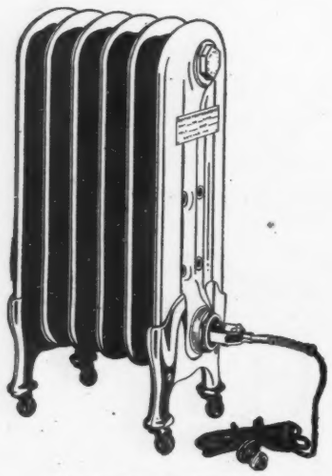
Fixture support of sheet steel for surface mounting or use with conduit boxes; "Universal Bipod."

Fixtures.—Henrich Reflector Co., 222 West 35th street, New York City. Listed March 10, 1920.

Show window and showcase type of fixtures.

Heaters, Air.—Electro Steam Radiator Co., 22 West Monroe street, Chicago. Listed May 25, 1920.

"Electro Steam." Portable, hermetically sealed radiator of pressed-steel sections with welded joints, containing small quantity of water vaporized by self-contained electric heating unit immersed in liquid in lower part of



Electro-Steam Radiator.

device, and connected to supply circuit by flexible cord and separable attachment plug; Style A, 110 volts, 600 watts.

Ground Clamps.—Ward Electric Co., 1411 Walnut street, Philadelphia. Listed April 20, 1920.

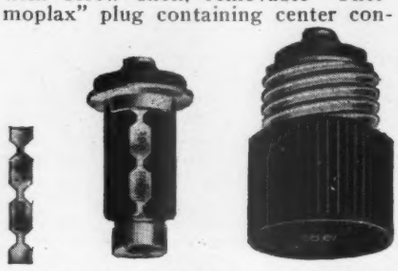
"Ward" ground clamp for use with rigid 1-in. conduit or less.

Ground Clamps. — Windman Electric Mfg. Co., Perth Amboy, N. J. Listed April 23, 1920.

"Windman" ground clamps for use with rigid 2-in. conduit or less.

Fuses, Renewable Plug.—Economy Fuse & Manufacturing Co. of Canada, Montreal, Can. Listed June 11, 1920.

"Economy" renewable plug fuses consisting of "Thermoplax" casing with screw shell, removable "Thermoplax" plug containing center contact and clamps for fusible element and sheet-metal fusible elements; 0-30 amperes, 125 volts.



"Economy" Renewable Plug Fuses.

Outlet Bushings.—Walker Bros. & Haviland, 18 Vesey street, New York City. Listed April 12. 1920.

Bushings of zinc alloy having readily removable metal closures to prevent entry of foreign material into conduit prior to installation of wires; distinguishing marking: Knurled edge, word "Bushettes" on closure and letter "B" on bushing; ½, ¾ and 1-in. sizes.

Ground Clamps—Frankel Light Co., 5016 Woodland avenue, Cleveland. Listed May 18, 1920.

"Ohio" ground clamps for use with rigid conduit.

Ground Clamps. — Potter-Acme Manufacturing Co., 912 Champlain avenue. N. W., Cleveland. Listed June 15, 1920.

"P." ground clamps for use with rigid conduit.

Attachment Plugs, Fuseless.—The Bryant Electric Co., Bridgeport, Conn. Listed June 4 1920.

"Spartan" fuseless attachment plugs; 660 watts. 250 volts; catalog No. 700; separable caps, catalog Nos KN, MA to ME, MN.

Automobile Starters. — Allis-Chalmers Manufacturing Co., Bullock Works, Norwood, O. Listed June 5, 1920.

Oil-immersed switch and transformer mounted as unit in metal case, with or without overload and no-voltage release coils; capacity 200 hp. or less, 600 volts or less; Type N-3.

Conduit Boxes.—Thomas & Betts, 63 Vesey street, New York City. Listed May 18, 1920.

"Standard" conduit boxes; catalog Nos. 160 and 161.

Cutout Bases. Plug Fuse.—Square D Co., Detroit, Mich. Listed May 25, 1920.

"Square D" plug-fuse coutout bases; 30-ampere; 125-volt cutout base mounted in steel box and adapted for two-wire distribution from either two or three-wire service; catalog No. 35211.

Flatirons.—The Dover Manufacturing Co., Dover, O. Listed May 28, 1920.

"Vea," 550 watts, 95-125 volts; "Dover" 6-D, 675; "A-Best-O," 570-625 watts, 95-125 volts; catalog No. 6-½-L.

Flatirons. — Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. Listed May 14, 1920.

"Westinghouse" laundry iron, Type M; 32-240 volts, 550 watts, 6.5 lbs.; styles 283427-32.

Fuses, Renewable Cartridge.—Pierce Fuse Corp., 752 Main street, Buffalo, N. Y. Listed June 11, 1920.

"Pierce" cartridge-inclosed fuse; 0-600 amperes. 250 volts.

Switches, Inclosed.—Trumbull-Vanderpoel Electric Manufacturing Co., Bantam, Conn. Listed June 8, 1920.

Double-pole switch and cutout base,

Mason Safety Switch.

for standard cartridge-inclosed fuses, inclosed in metal case and manually operable without opening case; so designed and constructed that it cannot be installed or used in a manner to expose normally current-carrying parts to contact by persons replacing or inspecting fuses; "Mason Safety Switch" 30 amperes, 250 volts; catalog No. 8322.

Switches, Knife.—Danbury Electric Manufacturing Co., Danbury, Conn. Listed June 2, 1920.

"Triangle DE." 30 amperes, 125 volts; catalog Nos. 100, 101.

ACTIVITIES IN THE TRADE

Business Developments, Sales Agencies, Trade Literature and Miscellaneous Items Concerning Electrical Manufacturers and Allied Business Interests

Janick & Golde, New York City, manufacturers of electrical supplies, have leased property at 764 Eighth avenue, for local operations.

Tollner Electric Co., 1174 Bedford avenue, Brooklyn, N. Y., manufacturer of electrical specialties, has increased its capital stock from $15,000 to $35,000.

American Electric Co., Newark, N. J., has filed notice of organization to operate a works at 617 Huntingdon street. Max Tischler is the head of the company.

North East Electric Co., 348 Whitney street, Rochester, N. Y., manufacturer of electrical specialties, has increased its capital from $3,000,000 to $6,000,000.

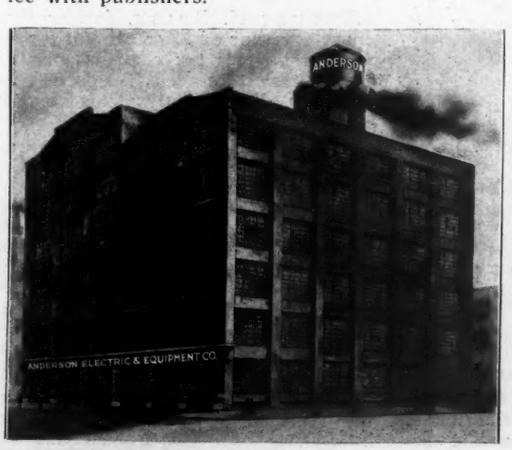
Requa Electrical Supply Co., 95 Paul St., Rochester, N. Y., manufacturer of electrical equipment, has filed notice of an increase in capital stock from $25,000 to $50,000.

Locke Insulator Co., Victor, N. Y., announces that B. A. Plimpton has resigned as sales manager of the company and has been succeeded by D. H. Osborne as acting sales manager.

Kingsbury-Samuel Electric Co., 213 North Calvert street, Baltimore, Md., manufacturer of electrical specialties, has acquired property at 530 North Calvert street for the establishment of a new plant.

Baker & Co., Inc., dealers in platinum, manganin sheet and other special alloys, is adding two stories to its plant at 54 Austin street, Newark, N. J. Other additions are planned for the near future.

Technical Advertising Service, Inc., New York City, has removed its headquarters from 1133 Broadway to the St. George building, 214 West 34th street, the change being made in order to obtain a more central location so as to facilitate quick service with publishers.



New Factory of the Anderson Electric & Equipment Co., Chicago.

Abercrombie-Bock Electric Co., Bridgeport, Conn., has removed its local works from 636 Water street to a building at John and Broad streets, where increased operating facilities are provided.

Electric Controller & Manufacturing Co., 2700 East 79th street, Cleveland, has opened a branch office in Philadelphia with H. K. Hardcastle in charge. The office is located in the Witherspoon building, Walnut and Juniper streets.

American Jobbers Supply Co., 1122 Woolworth building, New York City, as the eastern associated company of the Joslyn Manufacturing & Supply Co., Chicago, has taken over the sales in the east of the Lindsley Brothers Co., producers and distributors of cedar poles.

Ajax Electric Specialty Co., 1011 Market street, St. Louis, Mo., announces an issue of its 8% cumulative preferred stock par value of $100 for which subscriptions will be accepted on a basis of $102 for each share of preferred stock and two shares of common stock, par value $1 each, sold as of June 15, 1920, with dividends payable quarterly. The preferred stock is a first lien on all net assets of the corporation for entire principal and cumulative dividends of $2 per quarter.

Cutler-Hammer Manufacturing Co., Milwaukee, Wis., has issued its publication No. 845 on machine tool control in which is explained how "C-H" controllers fulfill conditions made necessary by recent changes in manufacturing processes. The first half of the book is devoted to machine tools of all kinds with suggestions for the selection of motor and control apparatus for different machinery. The second half of the book takes up "C-H." controllers more specifically, both manual and automatic, with illustrations, descriptions and horsepower ratings.

Anderson Electric & Equipment Co., 154 Whiting street, Chicago, is now occupying its new factory at the above location, where 75,000 sq. ft. of floor space is devoted to the manufacture of automobile accessories, electric lighting devices and dental and laboratory supplies which are the products of the company. The company has recently issued a catalog in which full details of the line of electrical specialties manufactured by the company are given. In its new modern factory the company is prepared to handle all orders promptly and with the increased facilities will be able to largely increase production.

Federal Electric Co., Chicago, announces that it has under contemplation plans whereby the employes of the company will have a voice in its

John F. Gilchrist, Entertaining Children at Housewarming Party.

management. The announcement was made by John F. Gilchrist, president of the company, at a housewarming celebrating the opening of the new plant of the company at State and 87th streets, which was attended by more than 1000 persons. "We want our employes to feel that their efforts are being appreciated," said Mr. Gilchrist. "We cannot give a definite outline at present of what the plan will be, but it will be in conformity with some of the new ideas of employes' representation." Mr. Gilchrist told the employes that they could purchase stock in the company at almost any terms convenient to themselves and that he was pleased to observe that approximately 40 per cent of the employes were already stockholders. The guests at the housewarming were entertained with ball games, field events, vaudeville acts, aeroplane ascensions and dancing, Mr. Gilchrist also acting as personal host to the large number of children present.

W. Green Electric Co., 81 Nassau St., New York City, has made extensive alterations in its premises to enable the company to have a permanent exhibit of all classes and kinds of electrical machinery used by watchmakers, jewelers, silversmiths and platers. This has been done with the idea of educating the retail jeweler in correctly operating plants of this sort in their own establishment.

Midstates Engineering Co., Westminster building, Chicago, has recently incorporated as consultants, specializing in industrial, power and plant engineering. The equipment and commercial division activities will be directed by J. H. Milliken, well known as an industrial sales manager. The engineering work will be executed by R. J. Gaudy, president of the company, who is widely known through his activities with the Sessions Engineering Co. and his connection with many notable engineering products.

PERSONAL MENTION

Biographical Sketches and Chronicle of Changes in Business Connections, Promotions and Other Personal News of the Industry

EARL M. ANDERSON, of Carlinville, Ill., has been made assistant electrical engineer at the power house of the Standard Oil Co. at Schoper, Ill.

W. L. SIMONTON has been appointed district manager of the Southwestern Bell Telephone Co., with headquarters at Beaumont, Tex. Mr. Simonton was formerly manager of the Galveston, Tex., office of the company.

ROY M. GREEN, professor of highway engineering at the Agricultural and Mechanical College of Texas, has resigned that position to become president and manager of the Western Laboratories at Lincoln, Neb.

W. E. GUGGENHEIM, formerly of the advertising department of Harvey Hubbell, Inc., Bridgeport, Conn., is now engaged in spscial sales work for the corporation. He has been succeeded in the advertising department by K. G. Mann.

PROF. M. E. COOLEY, dean of the engineering department of the University of Michigan, was elected president of the National Society for the Promotion of Engineering Education, at the recent convention of the society held at Ann Arbor, Mich.

W. J. KAUP has resigned his position as chief engineer with the Crucible Steel Co. of America, and will devote his time to consulting work entirely. Before joining the Crucible Steel Co. forces Mr. Kaup was general supervisor of tools for the Westinghouse Electric & Manufacturing Co.

EDWARD R. ANKER, for several years connected with the New York state banking department, has accepted a position with the New York Telephone Co. as assistant to Vice-President J. S. McCullough. Mr. Anker will have charge of the personal relations work of the company.

E. C. HUMMEL, superintendent of the electric steel foundry of the United Alloy Steel Corp., Canton, O., has purchased a controlling interest in the Philadelphia Electric Steel Castings Co., formerly the Philadelphia Electric Steel Corp., Philadelphia, and has been elected its president and general manager.

BRIG-GEN. R. C. MARSHALL, JR., has been appointed general manager of the Associated General Contractors, and will have charge of the program of development outlined by the organization at its last annual meeting. Mr. Marshall was formerly chief of the construction division of the United States Army.

ALONZO BURT, first vice-president and treasurer of the Chicago Telephone Co. and the Wisconsin Telephone Co., has resigned and will make his home in California in the future. Mr. Burt will be succeeded by B. S. Garvey, former general auditor of the two companies, as vice president and by William J. Boyd as treasurer. U. Franklin Cleveland succeeds Mr. Garvey as general auditor.

E. A. PHINNEY, of Golden Colo., has been elected chairman of the Rocky Mountain Geographic Section of the National Electric Light Association.

STEPHEN C. MASON, secretary of the McConway & Torley Co., Pittsburgh, has been re-elected president of the National Association of Manufacturers.

DARWIN P. KINGSLEY, president of the New York Life Insurance Co., has been elected president of the Chamber of Commerce of the State of New York.

GEN. GEORGE H. HARRIES, vice president of H. M. Byllesby & Co., Chicago, has been elected first vice-president of the Army and Navy Club of Chicago. General Harries served many

Gen. George H. Harries.

years in the United States Army before leaving the service in 1888 to enter newspaper work in Washington, D. C. During the Spanish-American war he served as colonel of the First District of Columbia Infantry, United States Volunteers, and participated in the siege of Santiago. For many years after that he was in command of the military and naval forces of the District of Columbia, retiring May 26, 1917. Almost immediately he offered his services to the government in the world war and served throughout the war period in various capacities. He has been vice-president of the Byllesby company since 1912.

R. D. PATTERSON, formerly eastern representative of the Lindsley Brothers Co., distributors of cedar poles, is now connected with the American Jobbers Supply Co., 1122 Woolworth building, New York City, which as associates of the Joslyn Manufacturing & Supply Co., Chicago, is handling the eastern sale of the Lindsley company products.

DR. LAUDER W. JONES has resigned as dean of the College of Engineering and Architecture and of the School of Chemistry of the University of Minnesota, Minneapolis, Minn., and has accepted a professorship at Princeton University, Princeton, N. J.

DEWITT CLINTON GROVE, past vice-president of the Technical Publicity Association has been appointed advertising manager of the Blaw-Knox Co., Pittsburgh. He succeeds George E. Land, who resigned July 1, to enter the advertising field as head of the Technical Publicity Co., Pittsburgh. Mr. Grove was formerly with the H. S. Cameron Pump Co., a subsidiary of the Ingersoll-Rand Co., where he had charge of the advertising department. Prior to that he handled mining machinery and other equipment advertising for the Ingersoll-Rand Co. For eight years previous, he was general advertising manager of the Deihl Manufacturing Co., Elizabethport, Pa.

A. B. COLE, assistant manager of the department of publicity of the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa., has been placed in charge of the advertising and promotion work for the Westinghouse Electric International Co. Other promotions in the International company organization are as follows: H. F. Griffith to be assistant to general manager; R. W. Everson to be manager of the merchandising department; H. C. Soule to be manager of the apparatus department and H. S. Reizenstein to be manager of the price department. At the New York City office G. H. Bucher has been made assistant to general manager; J. H. Payne, supervisor of agencies, and F. M. Sammis, manager of the incandescent lamp department.

OBITUARY.

JOHN F. HOGAN, transportation expert of the Wisconsin Railroad Commission, died July 7, at his home, Madison, Wis., aged 55 years.

AUGUST H. BOLTE, former lieutenant-governor of Missouri and for the past seven years tax commissioner for the Southwestern Bell Telephone Co., St. Louis, died recently at his home in St. Louis.

RUSSELL A. GRIFFIN, general sales manager of the National Pole Co., Escanaba, Mich., died July 14 of pneumonia. Before joining the pole company forces Mr. Griffith was for many years connected with the American Telephone & Telegraph Co., and later with the Western Electric Co.

B. F. MECHLING, president of the Albro-Clem Elevator Co., Philadelphia, died at his home in that city July 2, aged 73 years. Mr. Mechling had been president of the company for 27 years. He was also president of the Elevator Safety Appliance Co., Philadelphia, and a director of Mechling Brothers, chemical manufacturers, Camden, N. J.

BUSINESS OPPORTUNITIES

News of Electrical Construction Projects in All Parts of the Country, Proposals Invited, Foreign Trade Openings and New Companies

EASTERN STATES.

Old Town, Me.—The Bangor Railway & Lighting Co., Bangor, Me., has had plans prepared for extensions and improvements in its local two-story electrically operated pumping plant to cost about $15,000.

Quincy, Mass.—In connection with the three-story and basement plant on Hancock street to be erected by the Howard Chemical Co., a power house for general works service will be installed. The plant is estimated to cost about $60,000.

Northfield, Vt.—The Montano Co. is considering plans for the erection of a one-story addition to its local power house.

Springfield, Mass. — The United Electric Light Co. has completed plans for the installation of an intake for condensing water at its power plant on State street, to cost about $10,000.

Providence, R. I.—The Textile Finishing Machinery Co. will install new motors and other electrical equipment at its new building on Harris avenue.

Fairfield, Conn.—The Bullard Machine Co., Bridgeport, Conn., has had plansp repared for the erection of an addition to the power house at its plant at Fairfield.

New Haven, Conn.—The Model Laundry Co., 105 Hallock avenue, has had plans prepared for the erection of a one-story boiler plant, to cost about $20,000.

Albany, N. Y.—The Adirondack Power & Light Co. is completing plans for the erection of its combination hydroelectric and steam-operated power plant on the Mohawk river, near Albany. The General Electric Co., Schenectadv, N. Y., is interested in the project.

Binghamton, N. Y.—The Binghamton Light, Heat & Power Co. is installing a 5000-kw. steam turbogenerator at its Johnson City plant, with auxiliary equipment, and expects to have the additional unit ready for operation early in September. New boilers have recently been installed, and another 600-hp. unit will be placed at the plant at an early date.

Binghamton, N. Y.—A number of industrial plants in this vicinity are planning for the installation of new electric equipment, including motors, transformers and auxiliary operating apparatus. These comprise the Brewer-Titchener Co., manufacturing of automobile tops, etc.; the Archilles Rubber & Tire Co., manufacturer of automobile tires, and the Union Forging & Manufacturing Co. Service is furnished by the Binghamton Light, Heat & Power Co.

Brier Hill, N. Y.—The Brier Hill Electric Light & Power Co. has received permission from the State Public Service Commission to construct an electric power plant at Morristown, N. Y.

Brooklyn, N. Y.—The Flatbush Co. has filed plans for the erection of a one-story addition to its power house at 333 Clarkson avenue.

Lyons Falls, N. Y.—Harry P. Gould has made application to the State Public Service Commisison for permission to build an addition to the electric power plant now operated in conjunction with the Lyons Falls Paper Mills, with extension in transmission and distributing system for light and power service.

New York, N. Y.—The Ajax Fastener Co., 145 West 28th street, is planning the installation of new equipment at its plant, including power presses.

New York, N. Y.—The Long Island Railroad Co. has been ordered by the State Public Service Commission to install new cars and equipment in its electrical zone for extension in service. Immediate action has been directed to enter into contract for 100 new cars, to be ready for operation prior to the summer of next year.

New York, N. Y.—The board of aldermen has authorized a bond issue of $300,000 to be used for the purchase of equipment for use on the abandoned traction line of the Midland Railway Co., Staten Island. The new line will be municipally operated, the first of this kind in Greater New York. Of the bond issue, $200,000 will be used for cars, $10,000 for parts, $40,000 for new car barn and terminal facilities, and remainder for electric equipment, repairs, etc.

New York, N. Y.—The New York Telephone Co., 15 Day street, is completing plans for the erection of a number of additions to its local exchange plants. These include a three-story extension to the exchange at Tomkinsville, S. I.; addition to the exchange at Fairview and Gates avenue, Brooklyn, to cost about $70,000; extensions to the present four-story exchange building at Bayport and Central avenues, Far Rockaway, L. I.; one-story addition to exchange plant on Snyder avenue, Brooklyn; and addition to the exchange building at Buffalo, N. Y., including both Oxford and Riverside branches, to cost $32,000.

Oxford, N. Y.—The board of managers of the State Women's Relief Corps Home, Oxford institution, has completed plans for extensions and improvements in the power house at the home. Extensions and alterations will also be made in the cold storage plant.

Utica, N. Y.—The State Hospital Commission, Albany, N. Y., is having plans prepared for the construction of a new underground electric system at the Marcy division of the Utica State hospital, consisting of a three-wire system, utilizing present ducts so far as possible, and twelve new transformers. The installation is estimated to cost about $18,000. E. S. Elwood is the secretary of the commission.

Utica, N. Y.—The Utica Gas & Electric Co. has arranged for a bond issue of $1,700,000, the proceeds to be used in part for proposed additions and betterments in plant and system. The company operates all of the commercial lighting and power business at Utica, Little Falls and other sections, with total population served aggregating 200,000. F. M. Tait is the president of the company.

Butler, N. J.—The borough council has received the following low bids for the erection of an addition to the municipal electric power plant: Building, Harold Bang Co., Paterson, N. J., $14,825; machinery and equipment, J. W. Hooley & Co., 95 Liberty street, New York City, $37,500; and heating, J. R. Proctor & Co., New York City, $2,490.

Haddonfield, N. J.—The board of commisisoners has approved an appropriation of $113,000 for the installation of a new sewerage disposal plant, including electrical and mechanical equipment.

Hoboken, N. J.—The New York Telephone Co., 15 Dey street, New York City, is having plans prepared for extensions and improvements in its three-story telephone exchange at Seventh and Park avenues, to cost about $50,000.

Jersey Ctiy, N. J.—In connection with its four-story and basement factory at Eighth and Henderson streets the American Butterine Co. will build a new power house for general operating service.

Jersey City, N. J.—Electrical and mechanical equipment will be installed in the two-story laundry plant to be erected by the Standard Laundry Co., 965 Garfield avenue. The plant will cost about $40,000.

Lakewood, N. J.—To be used for funds for the Lakewood & Coast Water & Electric Co., repaying various obligations, the State Board of Public Utility Commissioners has granted permission to the Lakewood Water Co. to issue mortgage certificates to the amount of $30,000 and capital stock for $10,000.

Newark, N. J.—The New York Telephone Co., 15 Dey street, New York City, is having plans prepared for the erection of a two-story addition to its present three-story telephone exchange at Avon avenue and Hunterdon street, to cost about $200,000.

Phillipsburg, N. J.—The borough commissioners have made application to the State Board of Public Utility Commissioners requesting that the

equipment of the Consolidated Telephone Co. be removed from the local highways.

South River, N. J.—The State Board of Public Utility Commissioners has disposed of a request of the borough council for permission to build and operate an electric light and power plant, holding that its authority is not necessary, inasmuch as the proposed plant will be used exclusively for borough service. Plans for the plant will be prepared at once and it is proposed to proceed with construction at an early date.

Catasauqua, Pa.—The Crane Iron Co. will install a motor-driven machine to be used in connection with its new blast furnace, now in course of erection. It is planned to install other necessary electric apparatus at an early date, having the plant ready for service in August.

Connellsville, Pa. — The Donald Coal Mining Co., recently organized, will build an electric power plant at its properties at Cheat Haven, in connection with the installation of a complete coal mining plant, estimated to cost about $125,000. William P. Stillwagon is the president of the company.

Easton, Pa. — The Pennsylvania Utilities Co., 160 Ferry street, has had plans drawn for a one-story, 30 by 83 ft. power-house addition.

Hazleton, Pa.—The Pennsylvania Light & Power Co. is planning for the immediate rebuilding of the portion of its power plant at Harwood, destroyed by fire July 10, with loss estimated in excess of $200,000. Immediate repairs were made to allow for partial continuance of service. Considerable equipment was destroyed and this will be replaced with new machinery. The company is operated by the Electric Bond & Share Co., 71 Broadway, New York City.

Lebanon, Pa.—The Lebanon Steel Foundry Co. has completed the installation of an electric furnace of 800-kw., two-ton capacity type. The plant intends to operate a total of 12 heats a day under a direct 13,000-volt service from the Metropolitan Edison Co.

Philadelphia, Pa.—The Bell Telephone Co. has filed plans for extensions and improvements in its exchange plant on West Chelten avenue, to cost about $20,000.

Philadelphia, Pa.—The American Manganese Bronze Co., Rhawn and Hegerman streets, has completed plans for the installation of a new electric switching plant at its works.

Philadelphia, Pa.—The American Gas Co., operating the Philadelphia Suburban Gas & Electric Co., has arranged for a note issue totaling $2,200,000, the proceeds to be used in part for proposed extensions and betterments in plant and system. The company has a total of 14 electric generating plants, with combined capacity of 71,175 kw-hrs. per day, and a number of gas plants.

Philadelphia, Pa.—D. F. Water, 53 Wister street, will make extensions and improvements in its power house at 64 Collum street, to cost about $25,000.

Philadelphia, Pa.—Electrical and mechanical equipment will be installed in the new two-story laundry and heating plant to be erected on Chestnut Hill, Germantown, by the Chestnut Hill hospital. The structure will be 28 by 75 ft.

Reading, Pa.—The Carpenter Steel Co. is reported to be planning the installation of three new electric furnaces at its plant. The company is now operating four 6-ton furnaces of this type.

Torresdale, Pa.—The Sacred Heart convent has filed plans for extensions and improvements in the power house at the institution.

York Haven, Pa.—The York Haven Power Co. has entered into contract with the Annville & Palmyra Light Co. for supplying service, and has submitted the agreement to the State Public Service Commission for approval.

Baltimore, Md.—The Consolidated Gas, Electric Light & Power Co. is having plans prepared for the erection of a plant in the vicinity of Dundalk. The plant will be similar to the company's station at Westport, recently completed, with total generating capacity to be about 20,000 kw.

Baltimore, Md.—The Consolidated Gas, Electric, Light & Power Co. has completed plans for the erection of a one-story substation, 56 by 110 ft. on the Philadelphia road, to cost about $42,000.

Frederick, Md.—The Hagerstown & Frederick Railway Co. is planning extensive additions and improvements in its local plants to include the installation of new electric equipment, including boosters, high-tension apparatus and exhausters.

Oxford, Md.—The town commissioners contemplate the erection of a municipal electric light plant.

Wilmington, Del.—The street department has granted permisison to the Diamond State Telephone Co. to install a new underground conduit system on West Seventh street, from Shipley to Franklin streets. The installation, with new service connections, is estimated to cost about $200,000.

Norfolk, Va.—The Bureau of Yards & Docks, Washington, D. C., has completed plans for the installation of a new underground distributing system at the local naval yards.

Boiling Springs, N. C.—O. P. Hamrick is planning for the installation of an electric lighting system to serve this section and neighboring communities.

NORTH CENTRAL STATES.

Akron, O.—The city council has under consideration a plan for the establishment of a municipal power plant at an estimated cost of $100,000. H. H. Esseylstyn, engineer, Dime Bank building, Detroit, is the engineer on the project.

Cincinnati, O.—The Hercules Rubber Co. has plans under way for the erection of the first unit of a new plant, the unit to be 100 by 200 ft. In addition the company will build a power plant capable of taking care of the needs of the entire plant on its completion. The plant will occupy a 35-acre site at Bridgetown. E. H. Haeffner is the president of the company, which is capitalized at $1,000,000.

Cleveland, O.—The board of education will erect a power house and school building at East 92nd street and Parkgate avenue. Address G. Hogan, secretary board of education, for further information.

Cleveland, O.—The citizens will vote on Aug. 10 on a proposition to issue bonds sufficient to cover the cost of replacing all street and park gas lamps with electric lights.

Cleveland, O.—The Cleveland Electric Illuminating Co. will build a one-story, 45 by 70 ft. addition to its power house at West 65th street and Madison avenue, at an estimated cost of $75,000.

Columbus, O.—The Atlas Brass Foundry Co. has equipped its foundry with electric furnaces and also uses electricity for drying cores, increasing its capacity over 100%.

Middletown, O.—The Colin-Garner Paper Co. will erect a one-story, 50 by 80 ft. power house, to cost about $45,000.

Tiffin, O.—The Burroughs Adding Machine Co. will build a branch factory having 50,000 sq. ft. of floor space at Tiffin. Considerable electric equipment will be installed in the plant.

Anderson, Ind. — Plans are being prepared for a municipal electric light and power plant, estimated to cost $300,000. J. Essington is the city clerk of Anderson and has charge of the project.

Goshen, Ind.—The power plant of the Northern Indiana Railway Co. and the substation of the Indiana & Michigan Electric Co. at Dunlaps, near Goshen, were recently destroyed by fire.

Bay City, Mich.—Considerable electrical equipment will be installed in the rubber manufacturing plant to be erected by the Wildman Rubber Co., at an estimated cost of $2,000,000.

Detroit, Mich.—The Detroit Tool Co., 1487 St. Antoine street, is taking bids on a two-story, 60 by 121 ft., factory and boiler room addition.

Hamtramck, Mich. — The Briggs Manufacturing Co. is contemplating the construction of a power house, 80 by 83 ft.

Mt. Pleasant, Mich.—A power and heating plant to cost about $30,000 will be installed at the Indian school.

Niles, Mich.—The Bell Telephone Co. has appropriated $30,000 for remodeling the local telephone exchange. The American Telephone & Telegraph Co. will rebuild the transmission lines between Niles and South Bend, Ind.

St. Clair, Mich.—Improvements to the local waterworks system will include the installation of a 300-hp. engine, a 200-kv-a., direct-connected generator and other equipment.

Traverse City, Mich.—The proposal to hold a special election for the purpose of voting on the issuance of $75,000 in electric light bonds has been abandoned.

Chicago, Ill.—Sargent & Lundy, 72 West Adams street, are the structural and mechanical engineers for a power house to be built on the Mohawk river, near Albany, N. Y.

Chicago, Ill.—The Chicago By-Products Co., 122 South Michigan

avenue, has obtained permits for the erection of a boiler house, estimated to cost $180,000.

Evanston, Ill.—The Chicago Telephone Co. will enlarge its operating station by the building of a two-story addition. An additional switchboard will also be installed.

Kewanee, Ill.—A modern system of electric street lighting will be installed in the city. Mayor Andrews is in charge of the project.

La Grange, Ill.—Plans have been completed by the directors of the Masonic Orphans' Home for a one-story power house to cost about $60,000.

Springfield, Ill.—The Springfield Gas & Electric Co. and the Springfield Consolidated Railway Co. are being taken over by the city which will issue $500,000 in bonds for improvements to the plants and also to the municipal light and power plant.

Madison, Wis. — The Peninsular Power Co., through Mead & Seastone, local engineers, is in the market for turbines, generators, switchboards and other machinery and equipment for a hydroelectric plant being constructed near Florence, Wis. The plant is estimated to cost $750,000.

Milwaukee, Wis.—Electric motors will be installed in the machine shop to be built by the American Metal Products Co., 671 Kinnickinnic avenue.

Superior, Wis.—To handle the increased telephone traffic between Superior, Wis., and Duluth, Minn., the Bell Telephone Co. will lay a new submarine cable between the two cities. There will be 300 pairs of wires in the new cable.

Taycheedah, Wis. — The Immel Construction Co., 200 Main street, Fond du Lac, Wis., will soon start work on a power house at Taycheedah.

Des Moines, Ia.—The state board of commissioners will erect a power plant at the state capitol building to cost $200,000. The Canfield Engineering Co., Flynn building, Des Moines, is the engineer in charge of the project.

Edith, Mo.—C. F. Robertson and Walter Bray, 311½ College avenue, Springfield, Mo., will build a hydroelectric plant to develop 38,000 hp. The estimated cost is $2,500,000.

Lawrence, Kan.—The Haskell Institute contemplates the expenditure of $20,000 in improvements and additions to the power and heating plant at the institution.

SOUTH CENTRAL STATES.

Smithville, Tenn. — An electric transmission line from the Great Falls Power Co. plant at Rock Island will be built to Smithville, citizens of the latter town having voted $30,000 in bonds for the purpose of constructing the line.

Geneva, Ala.—The Central Power Co. will erect a dam and power house to develop 1000 hp. and will build about 20 mi. of transmission lines. D. C. Chapman is the president of the company.

Prattville, Ala.—The Autauga Cotton Mills contemplates the installation of electrical equipment throughout its plant.

Pascagoula, Miss. — The Modern Welding & Machine Co. will install considerable electrical equipment in its new machine shop and foundry.

New Orleans, La. — Considerable electrical equipment will be installed in the box manufacturing plant to be erected by the Union Paper Products Co., recently organized with capital stock of $300,000. It is estimated that the plant and equipment will cost about $200,000.

Tallulah, La.—The Tallulah Light & Power Co. will build additions to its plant at an estimated cost of $10,000.

Anderson, Ark. — The National Manganese Co., Indianapolis, Ind., which owns land near Anderson, will construct a reservoir and build a plant to develop electric power.

Cotton Plant, Ark.—The Arkansas Hydroelectric Development Co., recently organized, is planning for the erection of a hydroelectric power plant on the Little Red river, Clebourne and White counties, to cost about $3,000,000. The proposed plant will have an initial generating capacity of about 20,000 kw., with high-tension transmission system and distributing lines covering a district of about 130 mi. Dickinson & Watkins, Little Rock, Ark., are the engineers on the project.

Anson, Tex.—The plant of the Anson Light & Power Co., recently destroyed by fire, will be rebuilt.

Dallas, Tex. — The Dallas Brass Manufacturing Co. is in the market for a 5-hp., 220-volt, a-c. motor and other equipment.

Hodge Station, Tex.—It is planned by the Trans-Continental Oil Co. to build a wax plant here at a cost of $750,000. The building will be electrically equipped. W. S. Barwick is the superintendent in charge of construction.

Hull, Tex.—A new electric company is being formed by G. L. Gilreath and R. M. Campbell to build and operate a local electric light and power plant.

Kilgore, Tex.—The city commissioners are planning the installation of an electric light plant to cost about $8000.

Marble Falls, Tex.—Col. C. H. Alexander of Dallas, who promoted the project of constructing a large dam across the Colorado river at Marble Falls and the installation of a hydroelectric plant of more than 100,000-hp. capacity several years ago, has just finished reorganizing the Syndicate Power Co., which will carry out the deferred enterprise. The dam is partly finished. According to Colonel Alexander, the contract has been let to J. P. Nelson, of San Antonio, for the construction of the first unit of the hydroelectric plant and the completing of the dam. It is estimated that the total cost of the project, including the building of power transmission lines to San Antonio, Austin and other towns within a radius of 150 mi., will be approximately $8,000,000.

Port Arthur, Tex.—The Eastern Texas Electric Co. is perfecting plans for a new electric generating system to consist of a 4000-kw. turbogenerator, boilers, pumping machinery and other auxiliary apparatus at an estimated cost of about $600,000. The Stone & Webster Engineering Co., 147 Milk street, Boston, is the engineer in charge of the project.

WESTERN STATES.

Osage, Wyo. — An electric light plant to cost about $12,500 will be built by the Osage Light Co., recently incorporated.

Seattle, Wash. — An issuance of $600,000 in municipal electric light and power plant bonds has been authorized by the city council. For further information address H. W. Carroll, city comptroller.

Tonasket, Wash.—Frank Wingo has been awarded the general contract for the construction of a connecting link between the Loomis and Tonasket transmission lines of the People's Telephone & Power Co.

Glendale, Ariz.—A. A. Carrick and Frank Mongham have been authorized to erect a power plant and pumps for irrigation purposes in the Avondale-Buckeye district.

Los Angeles, Cal.—The Robertson Cole Studios, Inc., will build a moving picture studio, including a power plant, on Gower street and Melrose avenue, at an estimated cost of $100,000.

Santa Maria, Cal.—The Santa Maria Gas Co. has taken over the property of the Santa Maria Gas & Power Co., together with the gas properties of the Midland Counties Public Service Corp. in Santa Barbara and San Luis Obispo counties. Extensive improvements, including $6,000,000 worth of work in the development of an hydroelectric plant, will soon be undertaken.

INCORPORATIONS.

Jersey City, N. J.—The Gaso-meter Corp. has been incorporated with capital stock of $100,000 to manufacture special meter parts, etc. Frank Kent, Edward Rice and John Kollin are the incorporators.

Brooklyn, N. Y.—The Komp Electric & Manufacturing Co. has been incorporated with capital stock of $10,000. G. A. Dewey, R. G. Dunbar and F. S. Komp, 2211 Nostrand avenue, are the incorporators.

Port Wing, Wis.—The North Wisconsin Hydro-Electric Power Co. has been incorporated with capital stock of $100,000 and will build a hydroelectric power plant on Iron river at Orienta Falls, T. N. Ekerstrom is the president of the company.

Atlanta, Ga.—The Boiler Equipment Service Co. has been incorporated with capital stock of $30,000. E. A. Brooks, J. Fisher and Louis Estes are the incorporators.

El Paso, Tex.—The Western Welding Manufacturing Co. has been incorporated with capital stock of $10,000. J. W. and M. A. Crowdus and L. B. Thompson are the incorporators.

Elyria, O.—The Wizard Electric Sweeper Co. has been incorporated with capital stock of $25,000. H. M. Davies, R. S. Davies and others are the incorporators.

Holyoke, Mass.—The Cole-Phelps Heating Co. has been incorporated with capital stock of $50,000. Edwin Q. Cole, John P. Phelps and Milton D. Pomeroy are the incorporators.

FINANCIAL NEWS

Comment on the Financial Outlook in the Electrical Industry, New Securities, Reports of Earnings, Dividends and Utility Stocks

American Telephone & Telegraph Shows Large Profits.

The American Telephone & Telegraph Co. during the first six months of this year had net profits, after all charges and federal taxes, of $26,328,663, equivalent to $5.95 a share on its common stock, or at the annual rate of nearly $12 a share. Dividends received during the six months amounted to $17,397,535 and interest and other revenue to $14,-531,282. . Telephone traffic for the six months, with one month estimated, netted $8,450,663, making total income for the half year $30,379,780. For expenses, federal taxes, etc., took $4,644,626 and interest charges $9,406,491, leaving net profits available for dividends of $26,-328,463. Of that amount $17,682,343 was distributed to stockholders, leaving a surplus for the six months of $8,646,320.

H. B. Thayer, president of the company, told the stockholders that the company had received in full the balance due from the government and that "adjustment to conditions arising from and following the war is proceeding more rapidly than we would have dared to hope."

The report of the Western Union Telegraph Co. for the six months ended on June 30 shows net income, after charges and federal taxes, of $6,954,000, or $6.97 a share earned on its capital stock. Gross revenue for the six months was $59,955,-000, and charges for repairs and depreciation $7,881,000.

Syndicate to Underwrite Manhattan Electrical Supply Co.

Chandler & Co., Inc., New York City, is organizing a syndicate to underwrite 37,000 shares of no par value capital stock to be issued by the Manhattan Electrical Supply Co., Inc., New York City, under a plan of recapitulation following the recent enactment of a no par value stock law in Massachusetts, where the corporation is organized. Of these 37,-000 shares, 24,100, more or less, will be offered in exchange, two shares for one, to holders of the present outstanding 12,050 shares of first preferred stock and 12,900 shares are to be sold for cash to provide the company with funds for additional working capital, the extension and improvement of existing facilities and general corporate needs. With the carrying into effect of the proposed plan of recapitalization, all the outstanding first and second preferred stocks will be retired and canceled and the company will have but one class of stock, that being the new capital stock without par value. The public offering price will be $57. The net earnings of the company in 1919 were $702,910, and from 1916 to 1919, inclusive, averaged $661,669 annually.

Fort Worth Power & Light Co.

	1920.	1919.
May gross	$ 168,716	$ 90,675
Net after taxes	88,415	42,458
Total income	89,054	42,470
Surplus after charges	72,583	29,624
Twelve months gross.	1,696,506	1,280,486
Net after taxes	871,543	577,754
Total income	878,950	581,842
Surplus after charges	715,417	428,540
Balance after preferred dividends	619,321	343,380

Philadelphia Co. Subsidiaries.

	1920.	1919.
May gross	$2,519,488	$2,064,970
Net earnings	974,381	790,980
Five months gross	14,771,718	12,619,108
Net earnings	7,190,509	5,983,619

Subsidiaries of Utah Securities Co.

	1920.	1919.
May gross	$ 633,229	$ 546,051
Net earnings	270,088	262,813
Twelve months gross.	7,827,450	7,035,852
Net earnings	3,871,500	3,710,216

Electric Storage Battery Raises Its Dividend Rate.

Placing of the Electric Storage Battery Co., Philadelphia, on a 12% dividend basis fulfills the promise that more good things were in store for the stockholders and explains the sustained position of shares on the market. At 130, the purchaser gets his stock at 125, figuring the allotment rights at $5, and on this price the yield at the new dividend rate is 9.6%. In twelve months' time the company has advanced its dividend rate no less than four times and has also given its stockholders in addition a 20% stock allotment at par. In July, 1919, the last dividend payment at 4% was made. Last October the quarterly dividend payment was raised from the long-established rate of 4% to 8% per annum. The next payment, three months later, was on a 10% basis and now the rate has been put up to 12%.

Idaho Power Co.

	1920.	1919.
May gross	$ 196,257	$ 160,684
Net after taxes	108,683	83,094
Total income	115,496	87,769
Surplus after charges	76,405	51,416
Twelve months gross.	1,981,481	1,597,739
Net after taxes	989,032	742,233
Total income	1,065,691	782,894
Surplus after charges	596,203	339,006
Balance after preferred dividends	532,568	283,948

Texas Power & Light Co.

	1920.	1919.
May gross	$ 338,309	$ 249,788
Net after taxes	106,397	75,913
Total income	106,612	77,246
Surplus after charges	49,834	22,732
Twelve months gross.	3,824,479	3,382,035
Net after taxes	1,304,648	1,085,037
Total income	1,310,983	1,090,067
Surplus after charges	651,683	413,041
Balance after preferred dividends	403,183	164,541

Duquesne Light Co. Arranges for Sale of Bonds.

A contract for the sale by the Duquesne Light Co., Pittsburgh, of $8,000,000 of its long term 6% bonds to a banking syndicate composed of Harris, Forbes & Co., Lee, Higginson & Co., Ladenburg, Thalmann & Co. and Hayden Stone & Co. has been closed. A distributing syndicate has sent out letters stating that the bonds, which have 29 years to run, will be offered at 85 and interest, to yield about 7¼%. The proceeds of the loan will be used to extend the company's new power plant at Cheswick, Pa. The bonds are part of an issue authorizd in 1919.

United Railway & Electric Co. of Baltimore.

(Earnings for the five months ended May 31, 1920.)

	1920.	1919.
Five months gross	$7,030,176	$5,756,121
Net after taxes	1,676,819	1,348,246
Total income	1,698,853	1,357,831
Surplus after fixed charges	338,910	34,650

Northern Texas Electric Co.

	1920.	1919.
May gross	$ 331,347	$ 264,546
Net earnings	129,206	103,403
Surplus after charges	104,344	78,360
Twelve months gross.	3,691,526	2,904,145
Net earnings	1,447,566	1,093,509
Surplus after charges	1,149,027	792,831

Nashville Railway & Light Co.

	1920.	1919.
May gross	$ 320,236	$ 264,678
Net earnings	74,608	63,517
Surplus after charges	34,701	24,220
Twelve months gross.	3,443,600	3,114,376
Net earnings	805,848	907,832
Surplus after charges	329,491	431,172
Balance after preferred dividends	204,491	306,172

WEEKLY COMPARISON OF CLOSING-BID PRICES OF SECURITIES OF LEADING ELECTRICAL COMPANIES.

Quotations furnished by F. M. Zeller & Co., Rookery Bldg., Chicago.

	Div. rate. Per cent.	Bid July 13.	Bid July 20.
Public Utilities—			
Adirondack Electric Power of Glens Falls, common	6	10	10
Adirondack Electric Power of Glens Falls, preferred	6	70	70
American Gas & Electric of New York, common	10+extra	101	101
American Gas & Electric of New York, preferred	6	35	35
American Light & Traction of New York, common	..	127	124
American Light & Traction of New York, preferred	6	81	80
American Power & Light of New York, common	4	47	46
American Power & Light of New York, preferred	6	65	65
American Public Utilities of Grand Rapids, common	..	4	4
American Public Utilities of Grand Rapids, preferred	7	11	16
American Telephone & Telegraph of New York	..	92	92
American Water Works & Elec. of New York, common	..	2	2
American Water Works & Elec. of New York, particip	7	5	6
American Water Works & Elec. of New York, first preferred	..	34	37
Appalachian Power, common	..	6	6
Appalachian Power, preferred	7	17	18
Cities Service of New York, common	+extra	327	326
Cities Service of New York, preferred	6	65	66
Commonwealth Edison of Chicago	8	102	102
Comm. Power, Railway & Light of Jackson, common	..	18	17
Comm. Power, Railway & Light of Jackson, preferred	6	38	38
Federal Light & Traction of New York, common	..	7	7
Federal Light & Traction of New York, preferred	..	43	43
Northern States Power of Chicago, common	..	30	28
Northern States Power of Chicago, preferred	ex.div.7	75	76
Pacific Gas & Electric of San Francisco, common	..	46	46
Public Service of Northern Illinois, Chicago, common	7	71	71
Public Service of Northern Illinois, Chicago, preferred	6	75	75
Standard Gas & Electric of Chicago, common	..	14	13
Standard Gas & Electric of Chicago, preferred	6	35	35
Tennessee Railway, Light & Power of Chattanooga, common	..	½	½
Tennessee Railway, Light & Power of Chattanooga, preferred	6	2	2
United Light & Railways of Grand Rapids, common	4	18	18
United Light & Railways of Grand Rapids, preferred	6	57	57
Western Power of San Francisco, common	..	15	15
Western Union Telegraph of New York	extra	82	83
Industrials—			
Electric Storage Battery of Philadelphia, common	4	100	98
General Electric of Schenectady	8	143	142
Westinghouse Electric & Mfg. of Pittsburgh, common	7	53	53